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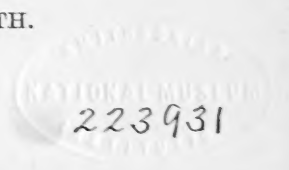
WITH THE ASSISTANCE OF

FREDERICK BOND, F.Z.S.
EDWARD A. FITCH, F.L.S.
JOHN A. POWER, M.D.

J. JENNER WEIR, F.L.S., F.Z.S.
F. BUCHANAN WHITE, M.I.,
F.L.S.

"By mutual confidence and mutual aid
Great deeds are done and great discoveries made."
POPE'S '*Homer*.'

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"Nature is a mine of pleasure,—new, boundless, and inexhaustible."

"The naturalist sees life where other men see naught: the woods, the mountain's side, the opening glades, and shadowy burns,—where dwell the new-born butterfly, the gnat, the speckled moth, and the smallest fly; all to him are so many peopled worlds, with customs, habits, and language, of which he alone has the master key."



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CALLIMORPHA DOMINULA.



CALLIMORPHA DOMINULA (variety).

THE very fine variety of *Callimorpha dominula* figured above was captured by Mr. M. Ricketts, of Bouverie House, Folkestone, on the 6th July, 1882, at St. Margaret's Bay, near Dover. It was observed from some distance as differing from the normal type, which was flying about in large numbers.

The colours, as will be seen from the woodcut, have become suffused in a remarkable manner, forming one of the most beautiful varieties which have as yet come under our notice.

JOHN T. CARRINGTON.

ON THE COLEOPTEROUS GENUS *HOLOPARAMECUS*, CURTIS.

WITH DESCRIPTIONS OF THREE SPECIES OCCURRING IN BRITAIN.

BY A. SIDNEY OLLIFF.

IN 1845 Professor Westwood called attention (Trans. Ent. Soc., Lond., vol. iv., p. 236) to the fact that the antennæ of some of the species of *Holoparamecus* varied in the number of joints. At the same time he suggested that this variation was sexual.

M. Victor Motschulsky has since pointed out (Bull. Soc. Imp. Nat., Moscou, 1867, p. 98) that the males of some of the species have the antennæ 9- and the females 10-jointed, whereas in other species both sexes have the antennæ 11-jointed; upon these characters he divides the species into two genera, adopting the name *Holoparamecus* for those having the antennæ composed of nine or ten joints, and *Calyptobium* for those with eleven; he also states that *H. singularis*, Beck., and *H. depressus*, Curtis, are not synonymous. After carefully examining a great number of specimens from various localities, I have come to the conclusion that they are really distinct species; and, having at my disposal examples of both these insects, I thought it would be interesting to publish descriptions of them, so that collectors may recognise the two, if they are so fortunate as to possess them.

I have also described a species which has not hitherto been recorded as British, and which appears on the Continent to be an uncommon insect.

SECTION A.—Antennæ 9-jointed in male, and 10-jointed in female (*Holoparamecus*).

HOLOPARAMECUS DEPRESSUS, Curtis.

Male.—Pale reddish testaceous, elongate and subdepressed, rather shiny, very sparingly clothed with fine silky pubescence. Head small, rounded in front, and covered with minute close punctures. Eyes rather large and convex. Antennæ 9-jointed; basal joint short and stout, second and third long and slender, fourth to sixth small and subglobose, seventh a little larger than the preceding, the eight and ninth forming an abrupt ovate club, of which the apical joint is slightly the smaller. Prothorax broader than long, moderately constricted behind, the posterior angles elevated; with a deep fovea upon its disc; marked at the base with two transverse lines, of which the anterior is bisinuate; these transverse lines are joined in the centre by a little impression, and on each side by a longitudinal furrow, commencing at the base. Elytra considerably broader than prothorax at the base, with irregular rows of rather coarse punctures; humeral prominences small, but distinctly visible; sutural stria commencing at the base, but effaced posteriorly; each elytron with a very indistinct oblique impressed line, running from the shoulder to the apex. Length, $1-1\frac{1}{4}$ mm.

Female.—Usually rather larger than the male, slightly more elongate and depressed. Eyes less convex. Antennæ 10-jointed, third joint rather shorter, apical joint slightly larger. The impressions at the base of the prothorax are deeper, especially the longitudinal furrows; the discal fovea is deeper and comparatively larger, and the oblique impressed lines upon the elytra are more distinct. Length, 1—1 $\frac{2}{3}$ mm.

This species appears to be a true in-door insect: all the specimens I have examined were captured either among packing-cases, old boxes, &c., in warehouses, or other similar localities.

HOLOPARAMECUS SINGULARIS, Beck.

Male.—Reddish testaceous, very slightly depressed, shiny, finely pubescent. Head sparingly punctured. Eyes very small, projecting. Antennæ 9-jointed (similar to those of *H. depressus*, Curtis). Prothorax considerably broader than the head, convex, slightly narrowed behind, but not constricted; posterior angles obtuse, not elevated; with a large fovea on each side at the base, and a narrow transverse luniform impression between and nearly joining them. Elytra broader than the prothorax, finely and not very distinctly punctured in irregular rows; humeral prominences distinct; sutural stria straight, effaced posteriorly. Length, 1 mm.

This species differs from *H. depressus*, Curtis, in having the prothorax only slightly narrowed and not constricted behind, in the shape of the basal impressions, and in the absence of the discal fovea; another difference, and this will serve to distinguish it at once, is the minuteness of its eyes.

The specimen described above is a male, and was taken by myself under a piece of wood placed upon the remains of a hot-bed in a garden at Holmwood, Surrey, on September 17th of the present year.

SECTION B.—Antennæ 11-jointed in both sexes (*Calyptobium*).

HOLOPARAMECUS CAULARUM, Aubé.

Testaceous, elongate and shining, very finely and sparsely pubescent. Head small, very finely punctured, somewhat rounded in front. Eyes moderately large, convex. Antennæ composed of eleven joints: the first and second rather large and thickened towards the extremity, the third to eighth subglobose

and very small, the ninth rather larger, and the two last forming an ovate club. Prothorax finely punctured, a little longer than broad, sides rounded and strongly constricted behind; the base with an oblong fovea on each side, close to the angles, and connected by a transverse line, which is very deeply and broadly impressed in the centre; the basal margin with a faintly impressed line. Elytra broader than prothorax, finely and irregularly punctured; humeral prominences strongly marked; sutural stria straight, effaced posteriorly. Length, $1\frac{1}{3}$ mm.

Besides the difference in the number of the joints of the antennæ, it may easily be distinguished from the two preceding species by its strongly constricted and proportionately longer prothorax, and by its having the lateral foveæ almost contiguous to the margin, and the basal line strongly impressed in the centre.

The only British specimen I have seen of this species, and from which I have taken the above description, is in the collection of Mr. Oliver E. Janson, who found it in July, 1869, crawling on a whitened wall, at the base of which was a quantity of decaying vegetable matter.

36, Mornington Road, Regent's Park, N.W.,
December 13, 1882.

NATURAL LOCALITIES OF BRITISH COLEOPTERA.

BY REV. W. W. FOWLER, M.A., F.L.S.

NO. XI.—BARK AND WOOD.

OF all the methods of collecting Coleoptera there is none perhaps that requires more labour than wood-collecting; at the same time there is none that better repays a collector, or produces rarer species. Some beetles bore into the solid wood, and are therefore hard to obtain; but there are numbers that live between the bark and the wood, and these may be comparatively easily procured. The use of the wood-boring beetles in Nature is obvious,—like the dung-beetles, they are scavengers; when a large tree falls in one of the virgin forests of the tropics, if it remained as it lay it would create a block in the vegetation around that would soon cause a vacant space, and in time the forests themselves would become nothing but a mass of prostrate

and withered trunks: the wood-boring beetles, however (both perfect insects and larvæ), bore holes into the solid wood and open it up to the rain and air; as by this means it becomes more and more rotten, other insects take possession of it, and finally, by the combined influences of the atmosphere and its insect-destroyers, the trunk is reduced to a pulp that serves as a manure for the young trees that are ready to take its place. In our country we are not likely to suffer from any such block to vegetation, for in these days every bit of wood seems to be removed as soon as it falls. Even in the New Forest or in Sherwood it is a rare thing to come across a trunk that has been left long enough for the beetles to take possession of it. It is very tantalising to hear collectors speak of the times when the trunks were allowed to lie year after year as they fell, affording them a rich harvest of species that we are now delighted to find a single specimen of in a day's, or even a week's, hunting. There is, however, a great deal that may yet be done, and the wood-beetles, even the rarest of them, are by no means extinct, and only require another indefatigable collector like Charles Turner to bring them forth again to the light.

The loose bark of fallen trees affords a very good hybernating place for many species of Carabidæ, Staphylinidæ, &c. I remember, as a beginner, taking a great quantity of *Anchomeni* and others in this way on the banks of a pond near Repton; many species also hibernate in the crevices and under the bark of standing trees. I have found *Erirhinus vorax* and many other species in profusion under willow-bark in winter.

The true bark and wood beetles may be divided into several classes:—

Some live between the bark and solid wood; these are usually flat species, admirably adapted by their structure for the narrow space into which they have to squeeze themselves: such are *Dendrophagus*, *Brontes*, *Pytho*, *Pediacus*, *Ips*, *Cerylon*, *Homalota plana*, *Prognatha quadricorne*, and many others; several Hemiptera, too, as *Aneurus levis* and *Aradus depressus*, are equally well suited for this their natural habitat.

Other species like places where the wood is rotten underneath the bark, where the bark, in fact, is loose, and affords a rain-proof covering to the rotten tinder-wood underneath; such bark should be carefully removed and shaken over a sheet, and the

rotten wood underneath should be carefully passed through a sieve, and the whole results stored in bags for examination at home; rare *Euplecti*, such as *E. punctatus* and *E. nigricans*, good *Scydmæni*, *Batrisus*, *Trichonyx*, very rare species of *Ptinella* and *Trichopteryx*, besides the best of the *Lathridii*, may be obtained or bred out by this method; in fact, any one interested in the minuter species will find this plan, which Mr. Matthews pointed out to me, one of the best possible, if only the standing rotten trees can be found.

Another class of beetles live in the same trees as those just mentioned, but they prefer the dampest spots, where the soft wood has been thoroughly soaked with moisture; in such places I have found *Paromalus* and *Abreus*, and *Baptolinus* and species of *Conurus* are sometimes very abundant. In this connection we may mention the *Phætophagi*, but these seem to like rather high-flavoured wood; *P. æneopiceus* affecting old damp wine casks, and *P. spadix* rotten stumps near high-water mark that have become thoroughly soaked with salt water.

Other beetles, again, live between the bark and the wood for the most part (sometimes in the bark itself), but, as their form is cylindrical, they have to make galleries in order to give themselves space to move about in; everyone almost is acquainted with the galleries of *Hylesinus fraxini*, but there are other beetles which have even obtained their names from a similar habit, as *Tomicus stenographus*, *T. typographus*, *T. dryographus*, *Pityophthorus micrographus*, &c.

Some beetles bore into solid wood; of these *Platypus cylindrus* is one of the most curious, although it is not in nearly as much request as its rare parasites, *Colydium elongatum* and *Oxylæmus cylindricus*, which are found occasionally in its burrows in the New Forest; *Trypodendron*, *Phlæotrya*, *Melasis*, and others also bore into solid wood. I have taken *Trypodendron domesticum* and *T. quercus* by stripping off the thick bark of a fallen tree in Sherwood Forest, and poking the insects out of their bores with straws or small twigs: this is the best way of procuring them, if practicable, but the bark must be taken off quickly and carefully, or else they retire into their burrows in the solid tree, and cannot be reached. It is the larvæ, as a rule, of the wood-boring beetles that do so much damage by boring into the trunks; the larva of *Scolytus destructor* causes great destruction

among elms; the larvæ of the Longicorns, and many of the Elateridæ, undergo all their changes in solid or rotten wood and under bark, whereas the great majority of the perfect insects are found by beating and sweeping under totally different conditions; many, however, of the Elaters and Longicorns in their perfect state may be taken more abundantly *in situ* out of the wood, before they have left their first abode, or after they have returned to it to prepare for future generations.

The old gnarled branches that jut out from the tops and sides of trees are very productive, but difficult to get at; these and the lower dead boughs will sometimes yield such things as *Platydema*, *Cistela ceramoides*, *Haplocnemus*, and *Conopalpus* (the latter in abundance); *Phlæophilus Edwardsii*, *Tetratoma desmaresti*, and others may be obtained in some localities, the former in great numbers, by tapping dead boughs on standing trees over an umbrella or sheet. Numerous species of Anobiidæ, Ptinidæ, Cissidæ, and Scolytidæ may be procured by examining dead boughs or branches, or better, by collecting any that seem at all infested, and keeping them at home in boxes, when great quantities may sometimes be bred out.

Very strong tools are required for wood-working; by far the most serviceable weapon is the miniature pickaxe (axe one side and mattock the other), referred to Entom. xv. 61, which was designed by Mr. Matthews (not by Mr. Crotch, as there stated), which is most effectual; a fern-trowel or tack-extractor is, however, quite sufficient for ordinary bark and rotten-wood working.

Perhaps a short list of some of the better wood-beetles, and the trees with which they have been found connected, may form a fitting conclusion for this subject.

The Scotch fir, and other trees of the same kind, appear to yield the largest number of species. Under fir-bark the following have occurred:—*Dendrophagus crenatus*, *Pytho depressus*, *Xantholinus lentus*, *Quedius levigatus*, *Rhizophagus politus*, *Zilora ferruginea*, *Salpingus ater*, *Pissodes notatus*, &c.; *Polygraphus pubescens*, *Carphoborus pilosus*, *Cis punctulatus*, *Cryphalus abietis*, *Lissodema 4-pustulatum*, and many *Tomici*, breed in fir twigs and branches; and besides these and many others, *Cryptophagus parallelus*, *Ernobius nigrinus*, *Hylastes cunicularius*, *Tetratoma ancora*, *Dircæa levigata*, *Orchesia minor*, *Mycetophagus fulvicollis*,

and *Athous undulatus* have either been beaten from dry fir tops or found on or in fir-stumps, or in some way or other connected with the tree.

The elm has produced *Brontes deplanatus* (taken in some numbers by Mr. Rye near Richmond), *Ischnodes sanguinicollis* (taken in abundance by Dr. Power at Esher), *Oxylæmus variolosus*, *Trichonyx sulcicollis*, *Quedius truncicola*, *Euryusa laticollis*, *Megapenthes lugens*, and *tibialis*. This latter beetle has occurred to Dr. Power in beech at Burnham Beeches; the beech has also produced *Orchesia undulata*, *Synchita medianensis*, and on one occasion a specimen of *Colydium elongatum* (far removed from *Platypus*).

The oak harbours many good species, especially Elateridæ and Buprestidæ. Dr. Power has kindly given me the following notes from his own experience:—" *Elater lythropterus*, *E. sanguineus*, *E. pomonæ*, oak-stump; *Elater rufitarsis*, inner side of wood of hollow oaks at Windsor; *Ludius ferrugineus*, a number of beetles and larvæ inside a hollow oak in Windsor Forest: this beetle has also been taken inside a hollow walnut at Swaffham, Cambridge; *Anthaxia nitidula* feeds inside hollow wood of old oak, New Forest; *Agrilus biguttatus*, between wood and bark of oak: it goes to pupa in the bark and comes out in the second year after cutting." Besides Elateridæ, good species like *Limexylon navale*, *Abdera quadri-* and *bi-fasciata*, *Pediacus dermestoides*, *Dorcatoma*, *Batrisus*, *Quedius scitus*, and *Q. chrysurus*, and many others, have been taken from the oak. *Agrilus sinuatus* has been found in whitethorn under the same circumstances as *A. biguttatus* in oak.

The apple and pear have produced *Scolytus pruni*, and other species of the same class, *Dromius 4-signatus*, *Haploenemi*, &c.

Willows occasionally harbour a good species abundantly, as *Lamia textor*, taken near Bristol; *Choragus sheppardi*, taken under bark of loose willows near Newark by Mr. Hadfield. *Hallomenus* has also occurred in this tree, but its food is fungus.

The birch seems especially attractive to *Eros*, both *E. minutus* and *E. affinis* having been taken under its bark. Several good Elaters, and beetles such as *Homalium inflatum*, *Rhopalodontus perforatus*, *Epuræa immunda*, &c., seem partial to this tree.

We may perhaps, in passing, mention *Agathidium nigripenne*, *Opilo mollis*, and *Ptenidium turgidum*, from ash; *Lemophilæus*

bimaculatus, *Abdera 4-fasciata*, and *Trichopteryx ambigua*, from hornbeam ; and *Mesites tardii*, from decayed hollies.

The curious beetle *Hylecactus dermestoides* requires a little consideration ; the specimens at the bottom of the tree, where there is plenty of food, are very large ; in the lower boughs they are much smaller, and in the small boughs at the top of the tree they are only about half or quarter the size of the trunk specimens.

The *Ptinellæ* are curious in their discrimination. *Ptinella testacea* is found mainly on birch, very rarely on oak (under bark of dead trees, better standing than lying down) ; *Ptinella aptera* and *P. angustula* are common on oak, and rare on birch ; *P. brittanica* is probably associated with the apple ; *P. denticollis* is found on almost any species of tree (willow, pine, mountain ash, &c.)

The curious *Anommatus 12-striatus* is found in rotting stumps, sometimes buried some feet beneath the surface of the ground. *Langelandia* should be looked for under the same conditions.

The subject of the wood-boring beetles cannot be more than touched upon in one paper. Many others, such as *Endophylæus*, *Teredus*, and other rare *Colydiadæ* and *Cucujidæ*, might be discussed ; a paper might be filled with the habitats of the Longicorns, which have hardly been mentioned. We have, however, already exceeded our proper limits, and must leave the subject.

The School House, Lincoln, December 12, 1882.

CAPTURES AND NOTES ON THE SEASON IN WEST NORFOLK.

By EDWARD A. ATMORE.

Having seen remarks from several of your correspondents on "the Season," I have resolved to send you a few notes thereon, trusting that they may prove interesting to some of your readers.

At the commencement of the season, a glance at the hedgerows after dusk showed a scarcity of the usually common *Hibernia rupicapraria* and *H. progemma*, which caused me to believe that the year would not be a very good one for Lepidopterists. But in nowise discouraged by the outlook, I sugared

birch-trunks repeatedly during March, in hopes of obtaining a series of *Cymatophora flavicornis* in a locality where I knew it occurred, but the result was thus far labour in vain. Frequent nocturnal visits to the sallow-bloom—which by the way is abundant in this neighbourhood—disclosed to me that insects were scarce, or this great natural attraction had lost its attractive powers. Species of *Teniocampæ* were not common, and I had to content myself with the capture of a few *Xylocampa lithoriza*, varied now and then by an odd *Anticlea badiata* and *Scotosia dubitata*. With the arrival of early summer and more genial or entomological weather (if I may so term it) I made more frequent excursions, but was often much disappointed in the results. Certain it is, that such species as *Eupisteria heparata*, *Ephyra pendularia*, *Hypsipetes impluviata*, *Eupithecia lariciata*, *E. indigata*, *Corycia temerata* and *C. taminata* were to be had, but in very limited numbers, the last species being the commonest. I observe here that our species of *Eupitheciæ* have been, without one exception, comparatively scarce, and also, it seems to me, somewhat erratic in their time of appearance, some of them appearing earlier, but most of them later than usual. One precocious specimen of *E. indigata* was netted as early as the 25th of April; another on the 29th, but the species did not seem to be well out before the end of the following month. Not a specimen of *E. nanata* was observed until the 26th of May, and good specimens continued to occur during June, July, August, and September, so that it was difficult to distinguish the first from the second brood, if indeed there was a second brood, as we may reasonably suppose. *E. pygmæata* was not observed at all, although I more than once trudged several miles in hopes of securing some good specimens for my friends. Whether this species emerged from the pupa earlier or later than usual I cannot say, but from what I learn from Mr. Hodgkinson most probably the latter would be the case. If others have been more fortunate with this species than myself, it would be interesting to know their experience. *Tephrosia punctulata* has been plentiful, and I can confirm Mr. South's remarks on the abundance of *Euchelia jacobææ* in this county. It literally swarmed, and later on in the season its food plant *Senecio jacobææ*, with its stems denuded of leaves, presented a very striking appearance. Turning my attention to Tortrices in May, I met with more

success. Among the species taken were two fine *Retinia turionana*; a fine series each of *Phoxopteryx siculana*, *P. inornatana*, *P. biarcuana*, *P. uncana*, and *Eupæcilia-nana*; also odd specimens of *Eupæcilia udana*, *Clepsis rusticana*, *Choreutes scintilulana*, and *Lobesia reliquana*. Macro collecting did not improve much until the end of June, when several species, notably *Melanippe unangulata* and *Coremia quadrifasciaria* began to appear in force, interspersed with a few *Acidalia inornata* and *Emmelesia alchemillata*. However, *Emmelesia affinitata*, usually plentiful, was rare. *C. quadrifasciaria* was boxed in good condition to the number of three dozen or more. *Macaria liturata* I found to be the commonest Geometer in fir-woods, a circumstance of unusual occurrence. *Fidonia piniaria*, generally very common, was relatively scarce. *Larentia didymata*, the commonest Geometer of the season, was everywhere a perfect pest; and in some places *L. pectinitaria*, not so readily recognised on the wing, came in "a very good second." Of the Tortrices taken in June I found *Penthina piceana*, *Pædisca bilunana*, and *Retinia pinivorana*, common; and a single specimen of *Phlæodes demarniana* was dislodged from birch and secured; also odd specimens of *Phoxopteryx diminutana* and *P. mitterpacheriana* were boxed. In July *C. quadrifasciaria* was still plentiful, although of course getting the worse for wear, and a sprinkling of such species as *Acidalia inornata*, *A. incanaria*, *Geometra papilionaria*, *Thera firmata*, and *Aventia flexula* were met with. Early in the evening, on damp portions of our heaths, *Schrankia turfosalis* was abroad in its usual plenty, and *Hypenodes costæstrigalis*, an equally sluggish species, was also to be found. A day on the coast for *Anerastia farrella* resulted in my boxing three specimens only, but taking into consideration the unfavourable weather it was no doubt as much as I could expect. During the month (July) specimens of *Orthotænia ericetana*, *Catoptria juliana*, *Dichelia grotiana*, and *Hypermezia cruciana* were met with; and fortune again favoured me with a long and fine series of *Tortrix lafauryana*, including some beautiful varieties. Two of these specimens have the costal blotches united so as to form one long blotch along the costa. I also succeeded in breeding the species from larvæ found feeding between united leaves and tops of *Myrica gale* (bog myrtle). *Ephestia passulella* and *Plodia interpunctella* were (especially the former) abundant about the Dock Company's premises.

Of the Tineæ taken I note a long series of *Stathmopoda pedella*, which was obtained by beating and shaking the branches of some old alders. The few remaining species found moderately common in this month, and which I have not yet enumerated, are *Agrotis porphyrea* and *Pempelia palumbella* (flying on heaths at dusk), and *Gelechia ligulella*, *Parasia parenthesella*, and *Platytes cerussellus*, most readily obtained by sweeping grassy spots on heaths. During August Macro collecting somewhat improved, but was still far below that of an average season, inasmuch as several species, which to my knowledge had not failed to occur annually, were this time unrepresented. Frequent visits to a locality overgrown with rushes was productive of a good series each of *Crambus hamellus* and *C. latistriellus*, with a few *C. pinetellus*, *C. inquinatellus* and *C. geniculellus*, all of which were met with by day, but were more plentiful after dusk, when they flew freely.

Having thus enumerated the best of the species met with here during the season, I will conclude with a few remarks on one of the probable indirect causes of this generally admitted dearth of Lepidoptera, viz., "the previous mild winter." For the last three or four years I have habitually done some little pupa digging in the autumn and spring, and also, when practicable, during the winter months, but never have I seen, as I witnessed last winter and spring, so many shells and remains of pupæ, which to all appearances had been recently destroyed by carnivorous beetles, earwigs, or other insects of a similar predaceous nature. This I especially noticed when working for pupæ of *Trachea piniperda* and *Fidonia pinaria* beneath the moss in fir-woods. In some instances the "culprit" (generally a beetle or earwig) could be seen, either very near the partly consumed pupa or actually concealed in the pupa itself. That the mild weather experienced during the last winter favoured the work of destructive beetles and other insects of a cannibal disposition (if not their increase), there can be little doubt. Such weather would also enable them to pursue their work of destruction continuously throughout the winter months. This in itself may be sufficient to account for the scarcity of healthy pupæ of *T. piniperda*, and the abnormal scarcity here of imagines of such a common insect as *F. pinaria*, both of which would, as pupæ, lie comparatively unmolested in normal winters. On the other

hand, it is not so easy to account for the unusual abundance of imagines of *Macaria liturata*, a species which is also in the pupal state during the winter months, and therefore under favourable conditions would be subject to attacks of common enemies. It is thus evident that other causes have been operating upon which I can throw no light.

I trust that the whole of the published "Notes on the Season" may be commented on by one or more of our scientific entomologists.

8, Union Street, King's Lynn, Oct. 19th, 1882.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

SATYRUS JANIRA, VARIETY.—On the 3rd of August last I caught in a clover field, near Cullompton, Devon, a very curious variety of *Satyrus janira*. All the wings are reddish white; the black eye-spot on the anterior wings is faintly indicated, and is surrounded by a light reddish brown cloud; the under wings have no markings, but the three principal wing-rays are slightly darker. There are no markings underneath. Thorax and abdomen reddish white.—F. A. WALROND; Spring Hill School, Southampton, October 9, 1882.

NOTES ON *LYCÆNA BÆTICA*.—In the first half of September, whilst in the South of France, I met with *Lycæna bætica* on several occasions, on the coast at Biarritz, flying over a species of *Erica*, and again in several localities in the Pyrenees up to nearly 5000 feet. It was, however, never common. I usually found it in company with *Lycæna alexis*, from which it was with difficulty distinguished on the wing. Staudinger gives the following as the geographical distribution of this species:—"Middle of Europe (except the Eastern portion), centre and South-West of France, Barbary, Canary Islands, Western Asia, and Persia." I believe it also occurs commonly at the Cape. I think if the "blues" on our South Coast were examined with greater care, *Lycæna bætica* would with us be more frequently taken.—A. H. JONES; Shrublands, Eltham, Nov., 1882.

VANESSA URTICÆ.—On the 9th of September last, near the Bel Alp (Brieg, Switzerland), I found a great many pupæ of

V. urticæ which were entirely covered with gold, and not merely with gold spots, as in England. The ground colour was greenish yellow, and the whole pupa was semitransparent, until a day or two before the imago came out. I brought some larvæ from the same place, and kept them in a tin box without much light, and they became dark brown speckled pupæ, without any gold at all. The imagines from the gold pupæ were lighter coloured than those from the brown ones. A week earlier I found at the Engstlen Alp, near Engelberg, some *V. urticæ* pupæ, which were not quite the same colour as English ones, but had the ordinary gold spots. From the same bed of nettles I took some larvæ, and kept them in the tin box, and they turned into pupæ without any gold. I found these at the Engstlen Alp after some days of very wet, dull weather; but when I found the gold pupæ at the Bel Alp the sun had shone moderately for several days. I am curious to know if the amount of gold on pupæ is affected by different degrees of light, or if any other cause is known for the variation.—M. S. JENKYNs; Riverside, East Moseley, Oct., 1882.

[There is considerable variation in the metallic lustre and coloration of the chrysalids of *Vanessa urticæ* in England, and the chrysalids of other butterflies have been observed to be affected by their environment.—J. J. W.]

FOOD OF MELITÆA ARTEMIS. — I have had seven larvæ of *M. artemis* this year. They all declined to eat germander, or either the broad or narrow-leaved plantain, but ate honeysuckle leaves greedily, both the wild and *Lonicera fragrantissima*.—M. S. JENKYNs; East Molesey, Nov., 1882.

PECULIAR ODOUR EMITTED BY ACHERONTIA ATROPOS. — Has anybody noticed the remarkable odour sent forth by *A. atropos* when handled in the imago state? I have had a good opportunity of observing the insect lately, as it has been commoner than usual, three or four being taken on the same evening. As I had some brought to me in a very bad condition, I kept them alive for some days in order to witness their peculiarity of stridulation. Although I believe the exact manner in which this sound is produced has never been satisfactorily discovered, it is too well-known to need comment, but I find that upon pressing the sides of the thorax it also emits a peculiar odour, resembling musk more than anything else; this occurred with all the

specimens I examined.—C. G. HALL; 3, Granville Road, Deal, November, 1882.

[Mr. A. H. Swinton says “a yellow fan or fascicle of hairs, rising perpendicularly from a fold at either side of the anterior part of the abdomen, emits a pungent scent of jessamine” (Ent. Mo. Mag. xiii. 219).—E. A. F.]

NEW FOOD-PLANT FOR *BOMBYX QUERCUS*.—In the middle of May, observing a small Portugal laurel to be much eaten, I looked for the cause, and found a half-grown larva of *Bombyx quercus* on one of the branches. I conveyed it to the house and supplied it with leaves of the same plant. I after that introduced it into the feeding cage daily, together with sprigs of whitethorn, but on every occasion have found the laurel eaten in preference to the other plant. Latterly I supplied it with nothing else, and it continued healthy and grew well until the 22nd of June, when it became full-fed, spun a cocoon, and changed to the chrysalis state. Thus it remained until the 17th of August, when a fine male imago emerged.—OWEN S. WILSON; Carmarthen.

CANNIBALISM IN *PIERIS CRATÆGI*.—On June 26th last, whilst walking with my brother from Visp to Zermatt, we came, soon after passing Stalden, upon a sudden turn in the road where it crossed a small mountain stream. Here disported a perfect flock of *P. cratægi*; so plentiful were they that by one sweep of the net it was possible to capture eight or ten at once. A step or two further we saw what at first sight seemed to be a living and moving white flower in the road, but it dispersed and flew off in various directions at our approach, with the exception of some three or four individuals, which we carefully watched upon perceiving that they were feasting, with extended probosces, on the juices of a fallen comrade of their own species that had been evidently trodden under foot that morning. These three or four it was impossible to drive away from the spot; they seemed half-stupefied with their repast, and only flew away a yard or so when disturbed, to return again at the first opportunity to their cannibalistic employment, and, as it appeared to be, enjoyment. Upon repassing the same spot a few days afterwards we again noticed a large flock of the same species by the stream. Though abundant throughout Switzerland, I never saw them in such countless swarms as here. I may mention that the whole of the Visp

Valley seems an unusually happy hunting-ground for both lepidopterist and coleopterist alike. Almost every flower was alive with species of *Argynnis*, e. g., *A. dia*, *A. aglaia*, *A. euphrosyne*; *Melitæa*, e. g., *M. phœbe*, *M. athalia*, &c.; *Parnassius apollo*, &c.; and throughout the lowlands of both this and the Rhone Valley a large beetle, a species of *Mylabris*, allied to *Meloë*, but more brilliantly coloured with orange and black, was conspicuously abundant. The handsome burnet moth, *Syntomis phegea*, was frequent in one spot; and *Satyrus hermione*, though this was difficult to catch. *Limenitis camilla*, *Polyommatus gordius*, and about fifteen species of "blues" rewarded careful research, with many others. I can quite understand that this locality is, in July and August, a little later than the time we were there, what it is currently reported to be, namely, a paradise of entomological wealth.—J. COSMO MELVILL; Kersal Cottage, Prestwich, Lancashire, Nov. 27, 1882.

NOTES ON *ELLOPIA FASCIARIA*.—Whilst spending a few days last Easter at Brandon, in Suffolk, I devoted some time to beating for pine-feeding larvæ, and, besides some numbers of *Thera variata* and *T. firmata*, procured about thirty of *E. fasciaria*. From one of these resulted, on the 13th of June, a beautiful example of the variety *prasinaria* of Hübner, in which the ground colour is of a soft olive-green, the two transverse bars alone being tinged with red. With regard to the imago of *E. fasciaria*, the information to be obtained from books is not very full, and it may therefore be of advantage to record my experience of it during 1882. The larvæ beaten in April varied very much both in colour and size, the former ranging from bright red to dull green, and the latter being far from uniform, as must be evident from the fact that the appearance of the imagos extended from May 23rd to July 13th. According to my previous experience the latter was a fairly late date for the species, so that I was much surprised when, on September 20th, in the same locality, I took a female *fasciaria* at rest on a pine-trunk. When a novice in matters entomological, "I wasted hateful hours" in digging for the pupæ of *E. fasciaria* beneath pine trees during the winter months, having inferred from Newman's account that this species hybernated in the pupal state. "Now," thought I, "if this female lays, surely the eggs will not hatch till next spring." And

she laid a goodly batch of eggs; but my expectations were falsified, and they hatched exactly three weeks after being laid.—GILBERT HENRY RAYNOR; Hereward Hall, Ely, Dec. 8, 1882.

NOTES ON *ACIDALIA CONTIGUARIA* AND *A. DEGENERARIA*.—Referring to the observation (Entom. xiv. 283) of your correspondent, the Rev. O. P. Cambridge, on the irregular pupating of *Chelonia caja*, I may say that I noticed a similar habit in *Acidalia contiguaria*, the last two of the five years during which I kept the species in confinement. A certain number of the larvæ of each brood would, as your correspondent states, at a certain stage, grow more vigorously and go into pupa, while their fellows would remain stationary, apparently not feeding, and certainly not increasing in size. The larvæ that had spun up came out in the autumn of the same year and deposited eggs, which hatched, and hibernated while still quite small. The others hibernated, and fed up the next spring. I considered that here was doubtless an inherited tendency acquired through natural selection for the better preservation of the life of the species, inasmuch as individuals in various stages of growth would presumably offer varied, and therefore proportionately greater, powers of resistance to the accidents of climate and season and the contingencies incidental to the struggle for existence. Through the kindness of Mrs. Hutchinson, who sent me the young larvæ, I have been this year enabled to breed *Acidalia degeneraria*, and I find the same tendency in this species, as some larvæ fed up and emerged this autumn; and from these I have young larvæ, which are now hibernating in company with the members of the previous generation. Another habit I may here mention, as having noticed in *Acidalia contiguaria*, is that of the larvæ spinning up very frequently in pairs, *i. e.*, of two larvæ placing their cocoons in close proximity, sometimes a part of the thin network forming a common wall to the two cocoons. This habit, doubtless, is not confined to the species mentioned, and I would here wish to ask any of your correspondents, who may have also observed it, whether they have noticed any rule as to the sex of the insects thus spun up. If of opposite sex, it can be very easily conceived that a habit of this kind may be of great advantage to species which inhabit bleak and exposed situations where the conditions of existence are severe, as there will thus be a greater probability

of the necessary fertilisation of the eggs.—HERBERT FORTESCUE FRYER; The Priory, Chatteris, December 12, 1882.

NOTE ON YPSIPETES ELUTATA.—In the November number of the 'Entomologist' (Entom. xv. 253) I stated that a race of *Ypsipetes elutata* was found in the mountains of the Island of Arran, apparently feeding on the heath. In the December number (Entom. xv. 285) Mr. G. T. Porritt suggested that bilberry was more likely to be the food-plant. I have written to Mr. M'Arthur on this question, and he assures me that high up in the mountains, where he took this topomorphic variety, the *Vaccinium myrtillus* does not grow; and that he entertains no doubt that the larvæ of this small dark variety fed on the heather, *Calluna vulgaris*. At the time I wrote the communication adverted to above, I suggested to Mr. M'Arthur that the larvæ fed on some small herbaceous willow, but he replied that he felt positive that such was not the case. I am much obliged to Mr. Porritt for giving me an opportunity of discussing this question, as his experience tends to show that in the neighbourhood of Huddersfield the bilberry, *Vaccinium myrtillus*, is commonly the food-plant of the larvæ. Inasmuch as by many botanists the Vacciniaceæ are treated as a section of the Ericaceæ, the genera *Vaccinium* and *Calluna* are probably closely allied, certainly much more nearly to each other than either genus is to the willows, Salicaceæ, on which the larvæ of *Ypsipetes elutata* are well known to feed. I therefore think the fact that the larva of this insect is a heather feeder is fairly established. By some accident, which I am unable to explain, the word *Eubolia* has been inserted in my communication to the 'Entomologist,' p. 284; my intention was to have written two species of *Cidaria*.—J. JENNER WEIR; 6, Haddo Villas, Blackheath.

COLEOPHORA SALINELLA.—I have pleasure in recording the rearing of about two dozen specimens from larvæ, which Mr. Stainton pronounced to be those of this species. The larvæ were found in October, feeding on *Suaeda maritima*, a plant which appears to be pretty generally distributed over the salterns on the Essex coast. The insects emerged at the end of June. I had previously a series of a *Coleophora* in my collection, bred from sea chenopodium, which I had been informed were the above-named species; but I am now satisfied they are distinct species,

though closely allied. I hear, upon very good authority, that the *Coleophora* larvæ, which feed on the seeds of the sea chenopodium, will not eat the seeds of the common chenopodium of our fields. I therefore incline to the opinion that when the cases of the two are compared, and we are better acquainted with their natural history, the salt-marsh insect will have to be separated from *C. tengstromella*, which name at present applies to both.—WM. MACHIN; 22, Argyle Road, Carlton Square, E., Dec. 20, 1882.

NOTES ROUND BROMLEY, KENT.—As there have been no notes in the 'Entomologist' about the season in this part of Kent, my experiences may be interesting. The season as a whole has been decidedly bad, although not nearly so much so as in other localities. Sugar, indeed, has been almost an entire failure, only one good insect coming to the sweets during the whole season, viz., *Dicycla oo*, and that in very limited numbers. On the other hand, during June and July, Geometræ were abundant on warm evenings, such insects as *Acidalia pusaria*, *A. exanthemaria*, *Iodis lactearia*, *Hypsipetes clutata*, and *Hemithea thymiaria* being very common, while *Phorodesma bajularia*, *Geometra papilionaria*, *Pericallia syringaria*, *Corycia tenerata*, *Melanthia albicillata*, *M. unangulata*, &c., were taken in smaller numbers. On the fences, in the early part of the year, *Acidalia trigeminata*, *Lobophora hexapterata*, *Coremia propugnata*, and *Ligdia adustata* were the best among numerous commoner species. In September and October the lamps and ivy were quite as productive as at the same time last year, but sugar still continued almost useless. At the lamps *Ennomos tiliaria*, *Eubolia cerviniaria*, *Hydræcia micacca* and *Anchocelis lunosa* were of frequent occurrence; and I took one specimen each of *Epione apiciaria*, *Ennomos erosaria*, and *Cirrædia xerampelina*. At ivy there was an abundance of insects, although the greater number were common species, chiefly consisting of *Orthosia lota*, *Cerastis vaccinii*, *C. spadicea*, *Anchocelis pistacina*, and the other usual visitors to the tempting blooms.—P. WATCHURST; 11, Hope Park, Bromley, Kent.

CAPTURES IN NORFOLK.—Owing to ill health I was compelled to leave London, in November, 1881, and from that time till September, 1882, I remained at Great Yarmouth (a place that entomologically has been known to yield its share of good things), taking occasional trips into the Fens. During the spring

months insects appeared to me to be decidedly scarce, but larvæ of common species, such as *Chelonia caxa*, *Bombyx quercus*, *Odonestis potatoaria*, *Boarmia rhomboidaria*, *Camptogramma bilineata*, *Leucania lithargyria*, *L. pallens*, *Triphena orbona*, &c., were abundant. At the end of May and the beginning of June *Eubolia lineolata* was common on the North Denes, and *Heliothis dipsacea* could be taken plentifully, flying at the blossoms of *Lotus corniculatus*, with which the Denes at this time are covered. On 21st June I went to Ranworth for a few days, and there the scarcity of Lepidoptera was most marked; and although most of the nights were favourable for collecting, very few species were seen. *Charocampa elpenor* was taken twice, once at sugar; *Hyria auroraria* and *Acidalia immutata*, both of which in former years I have taken abundantly, were far from common, but some good specimens of each were obtained; *Collix sparsata* was scarce, but *Hypsipetes clutata* was very common, there being hundreds of them in every possible variety. A few each of *Leucania pudorina* and *L. straminea* were taken, and I managed to secure two very good specimens of *Senta ulvæ*, one being the variety with black spots on the fore wings; *Plusia festuæ* was not uncommon, and of *Hydrelia unca* I took good specimens. Returning to Yarmouth on 1st July, I visited that part of the North Denes known as the "Marrams," and found *Leucania littoralis* in splendid condition and in large numbers, but *Nonagria elymi* rather worn and scarce; later on I took this insect in good order; *Agrotis ralligera* and *A. tritici* were both common, but *Mamestra abjecta* was rare, four specimens only falling to my lot. Such insects as *Leucania pallens*, *L. impura*, *Xylophasia polyodon*, *Triphena pronuba*, &c., I certainly never saw so numerous before, swarming as they were at the flowers of *Arundo arenaria*. *Leucania conigera*, and *L. lithargyria* were common; *L. comma* (a curious insect I thought to see there) and *Agrotis aquilina* occasionally put in an appearance, while *Caradrina blanda*, *C. cubicularis* and *Luperina testacea* could be taken freely; of *Cerigo cytherea* I took but one specimen. On July 29th, in splendid weather, I left here for Horning, my principal object being to take *Nonagria brevilinea*; I found it certainly, but during the few nights I was there I only managed to take five specimens. Among other species, *Nudaria senex*, *Lithosia griseola*, and *L. stramineola* were rather common; *Epione apiciaria* was abundant.

I netted one *Geometra papilionaria*, unfortunately a male; and for one or two nights *Eupithecia tenuiata* was out in considerable numbers; *Phibalapteryx lignata* and *Scotosia rhamnata* were both in good condition; and *Cidaria testata* was so numerous as to be almost a nuisance. Of Noctuæ, *Leucania phragmitidis* was common, but *L. straminea* was not nearly so numerous as I have seen it; *Nonagria despecta* and *N. fulva* could be taken in plenty, the specimens of *N. fulva* being particularly well coloured; and *Apamea fibrosa* was very common. The night of Wednesday, August 9th, was a perfect one for collecting, and I had a good time of it at Salhouse (a place a little above Horning) with *Nonagria neurica*, that night and the three following producing about forty specimens, although I am sorry to say the majority of them were rather worn. On the 17th August I again tried the Denes at Yarmouth, but the weather was bad, and as the grass in the best locality had been cut down I only took a few *Agrotis cursoria* and some good specimens of *Hydræcia nictitans*. The larvæ of *Papilio machaon* were again common at Ranworth and Horning; I heard of one or two marsh-men having as many as five hundred each. Unfortunately these men are not very careful in their manipulation of the larvæ, hundreds being crowded together in a small box, and consequently large numbers of them perish before, or immediately after, assuming the pupa state. The pupa too is often subjected to the roughest treatment; I had two dozen of a man at Ranworth, and from an examination I made of them I should think that certainly fourteen must result in cripples, even if they emerge at all. Larvæ of *Smerinthus populi*, *Dicranura vinula* and *Acronycta megacephala*, I found in profusion, together with a few *Notodonta dictæa*, on the poplar trees, in the cemetery attached to the fine old church of St. Nicholas, Great Yarmouth. Had my health been better and allowed me to get out more often, the number of species quoted would have been considerably augmented.—G. R. HARMER; Conway House, Pembridge Sq., W.

LEPIDOPTERA AT EASTBOURNE.—Although I can record some few exceptions among the Diurni, Eastbourne has followed the general rule, and the scarcity of insects has been as proverbial here as elsewhere this season. On the Downs *Lycæna corydon* swarmed, and those I took were unusually fine and very perfect; I managed to secure about a dozen *L. agestis*, evidently just out,

while my sister obtained nearly the same number of *L. alsus*. I only saw a few specimens of *Chortobius pamphilus* and *Satyrus janira*, while *L. alexis* was remarkable for its absence. Two entomologists told me they were taking *Melitæa artemis* at Abbot's Wood, but that they were scarce and much spoilt by the weather. Imagos of *Tunagra chærophyllata* were very common, and we netted many fine specimens in a very short time. All larvæ were scarce, and did not repay the trouble of beating for them. On July 22nd, while entomologising at Abbot's Wood with Mr. Harold Hodge, we saw a very fine male *Apatura iris* close to us, sometimes flying over our heads and then returning to its favourite throne. Soon after Mr. Hodge secured a specimen of *Limenitis sibylla*, evidently injured by some bird, but not at all worn. I mention this because, though so common in the New Forest, *L. sibylla* is always a scarce insect here. A fair number of *Arge galathea* were on the wing, flying sluggishly, but those I took were very fine and apparently freshly emerged from the pupa. *Thecla quercus* was fairly represented at its favourite haunt, the mountain ash; *Argynnis paphia* plentiful; *A. aglaia* and *A. adippe* very scarce, and all so spoilt by the constant rain that it was next to impossible to secure anything like perfect specimens. I have only seen occasional specimens of the *Vanessidæ*, only one *V. cardui*, and *Gonepteryx rhamni* has been equally scarce. *Hesperia sylvanus* and *H. linea* fairly common, but *Satyrus hyperanthus* rare. Larvæ of *Chærocampa elpenor* are usually abundant here in August, but I failed to procure more than eighteen full-fed larvæ, all of which pupated successfully. I then captured a fine *Acerida viridissima*, the large cannibal grasshopper, so common at Folkestone, and mentioned by Mr. J. W. Hall in the November 'Entomologist,' which I kept alive until a few days ago; its habits were very interesting to watch, while its loud chirp resounded all over the house after dark. In September I usually cut a supply of the flower heads of *Saponaria officinalis* (soapwort), and from them obtained a quantity of larvæ; as also those of *Dianthæcia cucubali* from *Silene inflata*, but this season, though I cut more heads than usual, I only found three larvæ. I have forgotten to mention that larvæ of *Bryophila perla* and *B. glandifera* were, as last year, plentiful, and the imagos equally so in July.—R. M. SOTHEY; Rozel, Eastbourne, Nov. 14th, 1882.

NOTES ON THE PAST SEASON.—The dearth of Lepidoptera this season has been as marked here as it has been in other places. The mild winter and the storm of April 29th are, I think, to be blamed for the empty store-boxes. The sallows were too forward, and produced but little,—a few *Tæniocampa gracilis*, *T. munda*, and one example of *Xylina semibrunnea*, being the reward of several nights' hard work. A few *Brephos parthenias* were taken, and *Melitæa artemis* turned up in some numbers. One specimen of *Stauropus fagi* was taken at rest on a holly tree by one of my pupils. *Arge galathea*, usually so abundant here, was very scarce, and I had great difficulty in procuring a dozen for a friend. I spent August at Lulworth Cove, but nothing was on the move there; and I did not set a lepidopterous insect the whole time. The sugar-pot and the ivy-bloom have proved no use; and the only thing that remains is to wish for better times.—[Rev.] A. C. HERVEY; Titchfield, Fareham, Hants, November 23, 1882.

LEPIDOPTEROUS LARVÆ AND YELLOW FLOWERS.—The larva of *Heliothis armigera* seems to have a partiality for yellow flowers. I found some feeding on the flowers of evening primrose at Biarritz in October last year; failing that, they readily took to honeysuckle flowers. When I brought them to England, and offered them a choice of chrysanthemums (the only flower I had at that time), they preferred yellow ones, and thrived upon them. One day I gave them a red chrysanthemum, and they would not eat that, but ate one of their number; they had shown no tendency to cannibalism on the journey when the honeysuckle was not fresh. Last June I had two larvæ of *Chesias spartiata*, one dark green (as described in Stainton's 'Manual'), feeding on the leaves of broom, the other entirely yellow, feeding on the flowers. They were on the same plant; the yellow one never touched the leaves, but the green one occasionally ate the flower. A larva of *Lithosia quadra* was sent me in June. I had never seen one, and, not knowing that lichen was its proper food, I gave it a selection to choose from, and it preferred yellow broom flowers, though it tried a little elm, buckthorn, cherry, and lettuce. M. S. JENKINS; East Molesey, Nov., 1882.

CERAMBYX CERDO, L., AT DEAL.—A fine female example of this beetle was taken at the back of the town last August, and

brought to me alive. This is the *Cerambyx heros* of Stephens' 'Manual.' There appears to have been some confusion with this insect. According to Stein and Weise, in their 'Catalogus Coleopterorum Europæ,' the synonymy should stand thus:—Genus *Cerambyx*, L.; *cerdo*, L. = *heros*, Scopoli; *scopolii*, Fuessly, = *cerdo*, Scop. The latter insect, *Scopolii*, is the *cerdo* in Stephens' 'Manual,' and has been taken on willows about Deptford and Isle of Ely. Stephens makes Fabricius the author for both *heros* and *cerdo*, but M. Marseul, in his 'European Catalogue' (1866), omits the name *heros*, and gives *cerdo*, L., and *Scopolii*, Laicht. Is the latter synonymous with *Scopolii*, Fuessly? *C. cerdo* (*heros*) has occurred at Portsmouth Dockyard, and various other places, at long intervals, and, although many entomologists are of opinion that it existed here in former days when our forest-land was more extensive, the fact of it generally occurring in places where there is shipping leads me still to believe that it is only imported amongst foreign timber.—C. G. HALL; 3, Granville Road, Deal, Nov., 1882.

STUDENTS OF DIPTERA WANTED.—Having for over twelve years collected Lepidoptera, I now intend to collect Diptera. The purpose of my calling attention to the fact is simply to obtain help through the kind correspondents of the 'Entomologist.' I shall be grateful for information relating to the distribution and habits of any species or genera of Diptera; for specimens forwarded to me I will endeavour to send their exchange value. I shall also be happy to have my attention called—by letter, or notes in the 'Entomologist'—to any memoirs, monographs, or notes on the order. Hoping to meet with a favourable response.—HERBERT E. NORRIS; St. Ives, Hunts, December, 1882.

[Certainly the study of our Diptera is sadly neglected. With the help of Schiner's 'Die Fliegen,' of the Fauna Austriaca, much progress may readily be made. Messrs. G. H. Verrall (Newmarket) and R. H. Meade (Bradford) are the British authorities on the order.—E. A. F.]



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CONTRIBUTIONS TO THE HISTORY OF THE BRITISH *PTEROPHORI*.

By RICHARD SOUTH.

(Continued from vol. xv., p. 149.)

ACIPTILIA, Hb.

baliodactylus, Zell.

tridactylus, Stph.

(PLATE I., FIG. 1.)

IMAGO.—Expanse, 10–13 lines. Fore wings whitish, sometimes with a pale brown or pale ochreous brown tinge; the costa is narrowly edged with dark brown to beyond the middle, at which point is situated a small linear spot darker than the costal edging; beyond this, and nearer the tip of outer digit, is a grey-brown cloud of variable intensity. Fringes grey-brown. Tips of both digits pointed, that of the inner slightly deflexed. Hind wings, fringes of the three feathers dark grey-brown, shafts paler. Head, thorax and legs same colour as fore wings. Abdomen with a yellowish tinge. July and August.

LARVA.—Length, 7 lines, tapering towards anal extremity. Head smaller than 2nd segment, yellowish green; a small black spot on each cheek, and brown mandibles. Ground colour dingy green, segmental divisions and dorsal line yellowish green. Tubercles, two dorsal rows (four on each side) whitish, with tufts of white hairs; subdorsal and spiracular rows, two warts on each segment, the anterior wart on each segment in both series is the largest, and one hair of the fascicle emitted therefrom is longer than the others. Prolegs and anal claspers transparent yellowish green. Food, marjoram (*Origanum vulgare*). Eats the terminal leaves; generally to be found at rest in the daytime on a plant, the top of which the larva has caused to droop by biting into the stem. Feeds in the evening. June.

PUPA.—Colour dingy green, a broad dorsal stripe obscure red-brown; dorsal hairs and warts as in the larva; sometimes the whole of the dorsal area is suffused with red-brown; in this case the wing-cases are pale green, and the antennæ-cases either brownish green or red-brown; fastened by anal segment to some portion of food-plant, often to a leaf or stem of the withered top. July.

Plate I., fig. 1, *Aciptilia baliodactylus*; 1 a, larva; 1 b, ditto, enlarged; 1 c, pupa, enlarged; 1 d, food-plant, marjoram (*Origanum vulgare*).

I expect this species will be found not uncommon wherever the food-plant occurs in any quantity.

Thanks to Mr. A. B. Farn, larvæ of this species were found by Mr. Carrington and myself in Kent, in June last.

ACIPTILIA, Hb.

pentadactylus, Linn.

tridactyla, Scop.

(PLATE I., FIG. 2.)

IMAGO.—Expanse, 12–14 lines. Fore wings white, sometimes with a faint yellowish tinge; a few minute black scales on the inner margin of outer digit, and small dark grey dot in the curve of inner digit. Fringes long, white and silky. Tips of both digits pointed and deflexed. Hind wing white, with long white silky fringes; a small dark grey spot on the fringe near the middle of 2nd feather. Head, thorax, abdomen and legs white. June—August; most often seen in July.

LARVA.—Length, 8 lines; fairly stout, tapering slightly posteriorly. Head smaller than 2nd segment, shining yellowish; face pale greenish, a dark brown spot on each cheek; mandibles pale brown. Ground colour green; the dorsal area is margined by narrow whitish lines running from the 3rd segment; on these lines, at the posterior edge of each segment, is a large, somewhat triangular yellow spot, the enclosed ground colour is thus formed into a series of lozenges, intersected by the darker intestinal canal; the yellow spots on the 9th segment coalesce, forming a conspicuous blotch. Tubercles, two dorsal rows (two on each segment) black, from 5th to 11th segments inclusive, the others are of the ground colour; each emits a tuft of hair of unequal lengths, the shorter ones are whitish and the longer dark grey; two long grey hairs project over the head from the edge of 2nd segment, and there are also single grey hairs of considerable length rising from each of the dorsal warts on the 2nd, 3rd, 4th, 11th and 12th segments; those on the anterior segments stand nearly erect, whilst those on the posterior segments curve backwards. Subdorsal, a row of black warts, with tufts of short whitish and longer dark grey hairs; the spiracular row of warts

are transparent, and emit hairs as in the subdorsal set. Prolegs and anal claspers semitransparent, tipped with pale brown. May and June, on convolvulus (*Calystegia sepium*), eating the leaves and flowers; rests on the undersides of leaves and on the stems.

PUPA.—Pale green at first, afterwards greyish green, with three rows of black dorsal spots; hairs similar to the larval arrangement; fastened by the tail to a leaf or stem. May and June.

Plate I., fig. 2, *Aciptilia pentadactylus*; 2 a, larva; 2 b, ditto, enlarged; 2 c, pupa, enlarged; 2 d, food-plant, convolvulus (*Calystegia sepium*).

I am obliged to Mr. John T. Carrington for a supply of the larvæ of this species.

The imago is perhaps more often seen than that of any other species of the British plume moths; but although generally distributed it is nowhere, I think, so abundant as are one or two other species of the family in particular localities.

AGDISTIS, Hb.

bennetii, Curt.

(PLATE I., FIG. 3.)

IMAGO.—Expanse, 10–12 lines. Fore wings entire, tip subacute. Ground colour grey, sprinkled with brownish scales; centre of wing and towards hind margin slightly ochreous, sometimes rosy; above the inner margin are four black dots, the posterior of which varies in size, in some specimens being represented by a mere speck; near the costa and towards the apex is another black spot, and in some examples a sixth spot lies near the anal angle. Fringes grey-brown. Hind wing entire, hind margin slightly indented before the middle, dark grey, smoky at the base and inner margin, and anal angle blackish; fringes grey-brown. Head, body and legs grey-brown. June and August.

LARVA.—Length, 8 lines; slightly tapering posteriorly. Head smaller than 2nd segment, into which it is withdrawn when the larva is at rest; the colour is yellowish green; the crown, and a broad patch therefrom nearly to the mandibles on each side, rosy; a few short bristles are scattered over the upper portion of the head. Ground colour green, so thickly sprinkled with small white dots as to appear whitish green to the unassisted eye; skin considerably roughened and wrinkled laterally; the anterior segments are wrinkled dorsally also. No tubercles; the 2nd segment has horn-like points protruding from about its middle in a horizontal direction, the tips and bases of these are rosy; the anal segment is yellowish green on the sides, violet brown dorsally, and has four bristles projecting along its posterior edge at right angles with the claspers;

12th segment with a rather rosy horn, a yellowish stripe along the spiracular region. Food, sea-lavender (*Statice limonium*). July. Second brood, September to May (after hybernation).

PUPA.—Green, thickly sprinkled with white dots, and more or less suffused with violet-brown; wing- and antennæ-cases darker green; thorax slightly humped; head truncate, tipped with violet-brown. Suspended by the tail from withered leaf or flower-stem of food-plant. May, July.

Plate I., fig. 3, *Agdistes bennetii*; 3 a, larva enlarged; 3 b, pupa, natural size; 3 c, ditto, enlarged; 3 d, food-plant, sea-lavender (*Statice limonium*), showing where larvæ have fed.

I have to thank Messrs. Henry Moncreaff and E. G. Meek for larvæ of this species.

The hybernated may be found as soon as the food-plant throws out fresh leaves in the spring. Mr. Moncreaff says (Entom. v. p. 321) that where the plant shows signs of having been eaten the larva should be looked for. It resembles the plant in colour, and falls off its food on the slightest disturbance. Mr. Meek tells me that the larva is extremely difficult to find, as it unfortunately happens that leaves of sea-lavender, with holes and niches in them, are anything but scarce in the habitat of the insect. It would appear, therefore, that to obtain these larvæ one must be prepared to devote considerable time to the enterprise.

Mr. Carrington, who is familiar with the habits of *Agdistis bennetii* in a state of nature, informs me that the perfect insects, which are double-brooded, may be disturbed from among the food-plants on the salt marshes, near the estuaries of our rivers, throughout the day, especially during fine, calm afternoons; but the time of flight is shortly after dusk until midnight.

ACIPTILIA, Hb.

spilodactylus, Curt.

obsoletus, Zell.

(PLATE I., FIG. 4.)

IMAGO.—Expanse, 10–11 lines. Fore wing white, with a slight ochreous tinge; the markings are a black spot of irregular shape at the digital juncture, and four small linear black dots placed thus,—one on the costa just beyond the middle, one below this on the inner margin of inner digit, and one in the tip of each digit. Fringes whitish, grey at the tips of both digits, and a large greyish blotch about the middle of fringe of inner margin of inner digit. Tips of both digits pointed, that of inner deflexed.

Hind wing, shafts of feathers pale shining grey; fringes darker grey, long and silky. Head, thorax and legs white. July and August.

LARVA.—Length, 6 lines; attenuated posteriorly from 5th segment. Head smaller than 2nd segment; green, with a yellowish tinge; crown slightly freckled with brown; cheek spots small, brown; mandibles brown. Ground colour green, sprinkled with minute black dots. Tubercles, two dorsal rows (four on each segment) whitish, each emitting a star-like tuft of white hairs; subdorsal, one wart on each segment, with a star-like tuft of white hairs; spiracular, one wart on each segment, emitting a star-like tuft of white hairs, and two or three longer whitish hairs. Prolegs and claspers semitransparent, with a green tinge, and tipped with brown. Food, white horehound (*Marrubium vulgare*); feeds on the terminal leaves; rests on the upper surface of a leaf in damp or dull weather, but hides under the leaves when the sun shines. June and July.

PUPA.—Green, with whitish warts and hairs; wing-cases paler green. thickly studded with short whitish bristles along the edges. Fastened by anal segment to upper surface of leaf of food-plant. July.

Plate I., fig. 4, *Aciptilia spilodactylus*; 4 a, larva, enlarged; 4 b, pupa, enlarged; 4 c, food-plant, horehound (*Marrubium vulgare*).

I have to acknowledge my obligation to Mr. Carrington for a supply of the larvæ of this species, obtained from Mr. Rogers, of Freshwater, Isle of Wight. In 1879 I met with this "plume" in all stages in the Isle of Wight. Horehound, the food-plant, is very local in Great Britain, and in some places its growth is of a most stunted character; a few plants I met with in Norfolk were only about two inches high. In gardens, however, the plant usually attains a respectable size, and I have found it more profitable to search such plants, when they could be found, within say a two-mile radius of the wild plants.

All the larvæ I obtained at Ventnor, Isle of Wight, were taken off horehound growing in cottage gardens, about a mile from the reputed locality of the wild *Marrubium*.

12, Abbey Gardens, St. John's Wood, London, N.W.

(To be continued.)

NOTES ON OAK-GALLS AT KEW.

By R. ALLEN ROLFE.

IN the 'Entomologist' for March, 1881 (Entom. xiv. 54), some notes were published by me on the spread of various galls to species of *Quercus* other than *Q. Robur*, L., our common English

oak, chiefly owing to the different species and varieties being planted in close proximity to each other.

In the present paper I hope to redeem a promise then made, by recording a few additional observations on the same subject.

During the past two seasons I have frequently examined different species of *Quercus* for galls, both the spring and autumnal ones; and, besides verifying most of those previously recorded, am able to make the following additions to my former list.

Q. FARNETTO, Tenor.—Closely allied to *Q. Robur*, but with much larger leaves; fruit 2-4, sessile at the ends of the branches, and scales of the cup pubescent. Native of Italy and Greece.

Neuroterus lenticularis, Ol.—Has been common on this oak during the past season.

Q. LUSITANICA, Webb.

N. numismatis, Ol.—Common both in 1881 and 1882 on a large isolated tree, which has produced all the five species noted by me. The same gall has been common upon *Q. Boissieri*, Reuter, during both seasons; but it is only a form of *Q. infectoria*, Oliv., on which the silk-button gall seems quite at home.

Q. ROBUR, L.—I have met with the following additional galls on this species:—

Spathogaster aprilius, Gir.—Last spring I met with gall which I believe to belong to this species, but the fly had escaped; next season perhaps it will occur again, giving me an opportunity of verifying the determination.

Andricus quadrilineatus, Hart.—In 1881 this gall was most abundant, but last year equally rare.

Andricus amenti, Gir.—On the 12th of May, 1881, I found one specimen of this gall; the fly had then escaped.

Dryophanta longiventris, Hart.—The galls of the genus *Dryophanta* are certainly very puzzling: the common *D. divisa*, Hart., is distinct enough; also *D. scutellaris*, Ol., when large,—the common cherry-gall. I have a third species, which must be *D. longiventris*, Hart., by the description and figure (Entom. ix. 146); but if I am correct this species is not so rare in Britain as supposed, for I have it from Derbyshire, and have collected it myself in Cassiobury Park, near Watford, Herts; and at Kew. At first I mistook it for *D. scutellaris*, dwarfed by inquiline, as a tree affected with the large cherry-galls in 1879 was in the

following year rather crowded with this smaller gall; nor could I find a single large one. They are 2-3 lin. diam., thick-walled, flattened at base, with bands of a paler colour, often raised into small papillæ; if in the sun they acquire a rosy tinge, but in the shade are green, with nearly white papillæ. The gall mentioned as *D. scutellaris* on *Q. Turneri*, Willd. (which, by the way, still retains its beautiful rose-colour, as when gathered), belongs to this species.

Aphilothrix globuli, Hart.—The “two specimens” of “*A. autumnalis*, Hart.,” of my former paper (*l. c.*, p. 54), belong to this species, and should be corrected.

A. albopunctata, Schl.—Fairly common, both in 1881 and 1882.

It will be noticed that varieties of *Q. Robur* are not mentioned in this paper, but I have come to the conclusion that for entomological purposes this is unnecessary; galls that occur upon one will also be found upon another, when planted together. Even the rich colours found in vars. *purpurea* and *concordia* do not afford any protection from the insects.

Until last autumn I had not noticed any difference in the colour of the galls found upon the leaves of the purple oak; then, however, a tree of the var. *Granbyana*, Hort., was observed to have quantities of *N. lenticularis* galls, all of a uniform blackish purple, darker than the leaves, which are not nearly so dark as the var. *purpurea*,—a curious concentration of the colouring pigment in the gall tissue.

There are two points in my former paper worthy of a passing note, *viz.*—1st, The curiously attenuated galls of *Cynips Kollari* on *Quercus Turneri*; and 2ndly, The acorn-galls of *Andricus glandium* on *Quercus Cerris*, and its variety *Lucombeana*.

Respecting the former no doubt can now exist that *Cynips Kollari* is the maker, for that insect has been bred by me from a number of galls kept separate for the purpose; also some of the usual inquilines. I have met with approaches to the same form on *Q. Robur*.

Of the galls of *Andricus glandium*, gathered in 1879, a large number were preserved; these still contain healthy larvæ, apparently as much so as some gathered this autumn. I am awaiting the result with much curiosity; surely they will die before long,

or else become pupæ, and finally assume the perfect state. Last autumn they were again very abundant.

In the 'Gardener's Chronicle' for 1868 (part 1, p. 295), a paper was published by Mr. J. Barnes, of Bicton, on the "Ravages of Oak-galls." In this paper a list of "Varieties of Oak on which *Cynips Kollari* is found," occurs, and as Miss Ormerod has copied the same into her 'Manual of Injurious Insects' (p. 213), an analysis may not be considered out of place in these pages.

Quercus Tausin and *Q. pyrenaica* are synonyms of *Q. Toza*, Bosc.

Q. Turneri, a supposed hybrid, is placed by DeCandolle under *Q. lusitanica*.

Q. pedunculata, *Q. pendula*, *Q. pubescens*, *Q. sessiliflora*, *Q. Louettii*, and *Q. heterophylla*, are all forms of *Q. Robur*, L.

The above are known to me as affected by *Cynips Kollari*.

Q. australis, Link, is a synonym of *Q. lusitanica*, Webb, on which I have not yet seen *C. Kollari*, excepting on the supposed variety *Clusii*, DC., the *Q. Turneri*, Willd.

Q. dentata, Wats., and *Q. asplenifolia*, Hort., are forms of *Q. Cerris*, L., on which *C. Kollari* has probably never been found. It is not unlikely that varieties of *Q. Robur* are meant by these names. *Q. magna-maculata* is also most likely a form of the same.

Q. dentata, Thunb., is a Japanese oak; and *Q. mongolica*, Fisch., a native of Amur, Mandschuria, and Dahuria.

Q. alba, L., *Q. rubra*, L., and *Q. prinus*, L. (of which *Q. montana* is only a synonym), are all North American species; while *Q. xalapensis*, Humb. and Bonpl., is from Mexico. I have not yet seen *C. Kollari* on either a Japanese or an American oak, though every facility for their spread occurs at Kew; I have seen branches touching, and even intermingling with, galled branches of *Q. Robur* without becoming affected. Possibly some of the names represent forms of our common oak, which exists in collections under a host of names. If, on the other hand, this gall really does occur on the species in question, it is a most interesting fact.

In conclusion, I would say that it will give me much pleasure to forward the name of any extra-European oak, on receipt of a small gall-bearing branch of the same.

Royal Herbarium, Kew, December 18, 1882.

INTRODUCTORY PAPERS ON ICHNEUMONIDÆ.

BY JOHN B. BRIDGMAN AND EDWARD A. FITCH.

No. III.—CRYPTIDÆ (*continued*).

Two species are added to the sixty included in Marshall's catalogue,—*C. antennatus*, Bridgm. (see Trans. Ent. Soc., Lond., 1881, p. 153), and *C. amœnus*, Gr. (Entom. xii. 55); and *C. dubius*, Tasch., has lately been bred by Mr. T. Wilson from rose sticks, where it is a parasite of *Emphytus cinctus*; whilst *C. elegans*, Desv., is not considered as a variety of *carnifex* (Trans. Ent. Soc., Lond., 1881, p. 153); neither is *C. ornatus*, Gr., considered a variety of *tricolor* (Trans. Ent. Soc., Lond., 1882, p. 143). Hitherto the species commonly bred from the sawfly (*Trichiosoma*) cocoons has in this country been considered identical with the true *C. migrator*, so commonly bred from the cocoons of Bombyces and other Lepidoptera; the former is *C. cimbicis* of Tschek. (Verh. z.-b. Gesell. Wien., xx. 412). Everywhere the very closely-allied *C. migrator*, *incubitor*, *fumipennis*, *cimbicis*, &c., have been much mixed; it is hoped the distinctions given in the above tables will help to correct this, but it is necessary that all bred specimens should be closely examined. The species included under *hostilis* and *porrectorius*, by Marshall, are also much confused by various authors.

C. attentorius is figured in Schäffer's 'Icones' (pl. 157, fig. 7), *C. minutorius* is figured by Panzer under the name of *rubricator* (pl. 84), *C. seticornis* (var. of *Dianæ*) is figured in Ratzeburg's 'Die Ichneumoniden' (vol. i., p. vi., fig. 10), and Curtis beautifully figures the female of *C. signatorius*, under the name of *bellosus*, on his plate 668. On plates 6 and 41 of Vollenhoven's 'Pinacographia,' thirteen species of *Cryptus* are well figured, including many details; nine of these are British. *C. antennatus* is badly figured in Trans. Ent. Soc., Lond., 1881, pl. viii., figs. 10, 10a. M. Boudier well illustrates the life-history of *C. migrator* in the plate accompanying his "Observations sur les habitudes de larves d'Ichneumon vivant aux dépens de la chenille du Bombyx du chêne" (Ann. Soc. Ent., France, v., pp. 357-365, pl. viii.). According to Boudier's observations the male *Crypti* emerged in May, 1834, from the smaller hole in the *B. quercus* cocoon (which was collected in October, 1853), and the eleven ichneumon

cocoons had their apices turned towards the point of exit; the females emerged from the larger hole, and there was a similar arrangement of the four cocoons; this is more clearly shown in figs. G, H, K and L of the plate. He described the species under the name of *Cryptus bombyci*.

The habits of the *Crypti* have already been so fully referred to that little further remains to be said. We have not confirmed Curtis's remark that *C. signatorius* "resisted the fumes of sulphur longer than any other insect that has come under my observation" (Brit. Ent., 668), either in this or any other species. The stinging powers of *C. obscurus* have been called attention to (Entom. xi. 35). The twice-recorded observation that *C. cimbicis* has been bred from a cocoon which had produced the perfect *Trichiosoma* requires further elucidation (Westwood, Trans. Ent. Soc., Lond., 3rd ser., vol. i., p. lxxxvii; Bridgman, Entom. xi. 135). F. Boie's remark, on v. Winthem's authority, that *C. viduatorius* can run on the surface of water like a *Hydrometra* (Stett. Ent. Zeit., xvi. 94), is also perhaps worthy of note. Ratzeburg instances a remarkable case of accelerated metamorphosis: on June 4th, 1848, his wife collected a pupa of *Tortrix ribeana*, in a rolled apple leaf, to which an Ichneumon egg was attached; the larva appeared on June 7th, and spun up on the 14th, while a *Cryptus porrectorius* (*assertorius*) emerged on June 24th. This is very different to what he records of *C. echthroides*, and what we now know of *Mesostenus obnoxius*. Bouché describes the larvæ and cocoons of *C. titillator*, *C. peregrinator*, and his *C. emphytorum* (Naturg. der Insekten., pp. 142, 143). Brischke gives two species of *Cryptus* as hyperparasitic, viz.:—*C. nubeculatus*, as bred from an *Exetastes* cocoon; and *C. titillator*, as bred from the cocoons of *Campoplex pugillator* (Deutsche Ent. Zeits., xxi. 286).

Crypti are recorded as bred from four orders of insects, and from various spiders' nests. The following list refers to our known British species, but, from the extreme difficulty of correct identification of the species, many records must be taken *cum grano salis*.

- | | | | |
|-----------------------|------|-----------------------------|-------------------|
| 1. viduatorius, Fabr. | from | Eupithecia oxycedrata*; | (Goosens) Giraud. |
| | | Nonagria typhæ?; | Boie. |
| 3. ? erythropus, Gr. | " | Emphytus cinctus; | Wilson. |
| 4. spiralis, Fourc. | " | Talæporia pseudobombycella; | Siebold |

6. *monticola*, *Gr.* from *Clostera anachoreta*; Taschenberg.
8. *tarsoleucus*, *Schr.* „ *Trachea piniperda*; Panzer. *Ammophila sabulosa*; (Siebold) Ratzeburg.
10. *cyanator*, *Gr.* „ *Arctia fuliginosa*; Gravenhorst. *Bombyx neustria*; (Roesel) Grav., (Graff.) Ratz. *Bombyx* cocoon in May; (Ritsema) Vollenhoven. *Diloba cæruleocephala*; (Bouché) Ratz. *Trachea piniperda*; Ratz. (*seticornis*). *Eumenes* sp.?; Gir.
13. *parvulus*, *Gr.* „ *Emphytus cinctus*; Wilson.
22. *titillator*, *Gr.* „ *Ebulea sambucalis*; Bouché. Spiders' eggs; (Reissig) Ratz., Brischke.
24. *minator*, *Gr.* „ *Hylotrypes bajulus*; Ratz.
29. *Dianæ*, *Gr.* „ *Trachea piniperda*; (Muss.) Hartig (*leucostomus*).
30. *sponsor*, *Fabr.* „ *Agrotis valligera*; (Hartlieb) Grav. *Trachea piniperda*; Ratz. (*filicornis*). *Xylophagous* insects?; Nördlinger.
31. *obscurus*, *Gr.* „ *Zygæna filipendulæ*; Ratz. (*filipendulæ*, Boie.). *Bombyx quercus*; Grav., (Rogenhofer) Tschek, Gir. *Dianthæcia capsincola*; (D'Orville) Parfitt. *Tæniocampa cruda*; Marshall. *Hadena thalassina* or *Noctua plecta*; Sang. *Tenthredopsis* (*Tenthredo instabilis*); Marshall.
32. *arrogans*, *Gr.* „ *Trachea piniperda*; Brischke.
34. *leucostictus*, *Gr.* „ *Lophyrus pallidus*; Brischke.
36. *porrectorius*, *Fabr.* „ *Tortrix ribeana*; Ratz., Kaltenbach. *T. rosana*; (Goureau) Dours' Cat. *Depressaria nervosa*; (D'Orville) Parfitt.
37. *anal*, *Gr.* „ *Liparis salicis*; (Bouché) Ratz. *Saperda populnea*; Gir.
38. *rufiventris*, *Gr.* „ *Talæporia pseudobombycella*; (Drewsen) Thomson, Fletcher, ?(Reissig) Ratz. *Cemiostoma lotella*; Bond.
42. *adustus*, *Gr.* „ *Lophyrus pini* or *similis*; Brischke. *L. pallidus*; Brischke. *L. pini*; Hart. (*leucostictus*), *L. pallidus*; Brischke (*opioleucus*).
43. *confecto*; *Gr.* „ *Osmia tridentata**; Dufour, (Frauenfeld) Tschek, Giraud. *Fœnus assectator*; (Giraud) Dours' Cat.
44. *nubeculatus*, *Gr.* „ *Psyche viciella**; Brischke. *Lophyrus pini*; (Graff, Brischke, Siebold) Ratz. *L. catocalus*; Voll.
47. *peregrinator*, *L.* „ *Ebulea sambucalis*; Bouché.
48. *tricolor*, *Gr.* „ *Pœcilocampa populi*; Parfitt. *Simyra venosa*; Eedle, (D'Orville) Parfitt, (Harwood) Big-nell. *Leucania* sp.?; Parfitt. *Trichiosoma lucorum*; Parfitt.
- ornatus, *Gr.* „ *Sesia formicæformis*; Brischke. *Zygæna Ephialtes**; (Hartlieb) Grav. *Bombyx neustria*; Goureau, (Boog) Voll.

49. *fugitivus*, *Gr.* from *Smerinthus populi*; (Fallou) *Gir. (gracilis)*.
51. *migrator*, *Fabr.* „ *Macroglossa stellatarum*; Marshall. *Zygæna*
*Ephialtes**; (Brischke) Ratz. *Bombyx*
quercus; generally. *B. trifolii*; (Perris)
Giraud, Brischke. *Lasiocampa pini**?;
Nees. *Dicranura bifida*; (Reinhard)
Tschek. *D. erminea*; (Richter) Grav.
D. vinula; (Drewsen) Ratz., Marshall.
*Plusia moneta**; (Richter) Grav. *Psyche*
*unicolor (graminella)**; Brischke. *P.*
*viciella**; Brischke. *P. atra**; Brischke.
Chalicodoma muraria; Tasch. *Trichiosoma*
lucorum; Reinhard, Marshall [cf. *cimbicis*].
Hylotoma rosarum; Tasch. *Eristalis*
sepulchralis; (v. d. Wulp.) Voll.
54. *fumipennis*, *Gr.* „ *Zygæna læta**; (Rogenhofer) Giraud. ? *Sa-*
turnia carpini; Barrett, Bridgman, Fitch,
Meldola. *Psyche viciella**; (Rogenhofer)
Tschek. *Trichiosoma lucorum*; Smith
(B. M. Coll.) [cf. *cimbicis*].
55. *pygoleucus*, *Gr.* „ *Bombyx neustria*, *Dicranura bifida*, *Psyche*
*viciella**, *Lophyrus pini* or *similis*;
Brischke.
56. *incubitor*, *Stroem.* „ *Euchelia Jacobææ*; Sang. *Saturnia carpini*,
*Psyche viciella**, *P. atra*; Brischke.
Trichiosoma lucorum; Brischke. *Cimbex*
variabilis; (Graff, Neuhaus) Ratz. *Hylotoma*
rosarum; Tasch.
57. *carnifex*, *Gr.* „ *Nonagria geminipuncta*; Voll., Brischke.
Leucania obsoleta; Brischke.
- elegans*, *Desv.* „ *Noctua*; (Drewsen) Thomson (*Drewseni*).
59. *signatorius*, *Fabr.* „ *Odynerus lævipes*; Curtis, Desvignes. *Osmia*
*tridentata**; Giraud. Old bramble stems;
Bignell, Bridgman.
- cimbicis*, *Tschek.* „ *Cimbex variabilis*; Tschek. *C. amerinæ*;
(Frauenfeld) Tschek. *Trichiosoma luo-*
rum; generally.
- dubius*, *Tasch.* „ *Emphytus cinctus*; Wilson.

LINOCERAS, *Tasch.*

Black; antennæ pale-ringed; femora and tibiæ red, apex of the latter black; tarsi pale testaceous. Male—face yellow. Female—antennæ tricoloured; aculeus shorter than abdomen.

1. *macrobatus*, $3\frac{1}{2}$ — $5\frac{1}{2}$ lines.

The long slender petiole at once distinguishes the species of this genus from all others of the family. Dr. Kriechbaumer's remarks on the synonymy of the genus, &c., must be consulted (*Ent. Nach.*, iv. 221, 251; v. 3). Although included in Desvignes'

British Museum catalogue, Marshall gives this species as doubtfully British. The National Collection contains one specimen from Desvignes' collection; and we have seen a fine male taken at Ventnor in July, 1867, by Mr. Pascoe. Dr. Giraud bred *L. macrobatus* from *Osmia adunca**, and Perris from a species of *Eumenes*; while Ratzeburg's *Acroricnus Schaumii*, which is certainly Gravenhorst's species, as pointed out by Kriechbaumer, was bred at the end of May, 1851, by Graff, from the nests of *Eumenes coarctata*. The male, with an enlarged cut of the metathorax, is well figured by Ratzeburg ('Die Ichneumoniden,' iii. 92); and a good coloured figure of the female, the abdomen of the male, &c., is given by Vollenhoven ('Pinacographia,' pl. 6, figs. 1, 1a, 1b).

CYRTOCRYPTUS, Marshall.

Black; areolet minute; legs red. Male—face, front coxæ and trochanters white; hind coxæ brown. Female—antennæ white-ringed; aculeus one-third of abdomen. - - - 1. *brachycentrus*, 3—4 lines.

The abdomen of this species is almost sessile, giving the insect a very Pimplid appearance, hence Taschenberg's specific name (*pimplarius*); the areola is very small, and the aculeus very short. The female is well figured by Vollenhoven in 'Pinacographia' (pl. 41, fig. 5). This species is not uncommon in Britain; according to Dours' Catalogue it has been bred from *Saperda populnea* by Col. Goureau.

MESOSTENUS, Grav.

A. Abdomen red; petiole and apex black. (Male and female.)

a. 1st segment of abdomen not punctate.

Lines before and lateral margins of scutellum white.

1. *albinotatus*, 2½—5 lines.

b. 1st segment with deep coarse punctures.

* Hind femora and basal half of front and middle ones black; also the post petiole, except the red apical margin. 2. *obnoxius*, 2½—4 lines.

** Hind and front femora red; post petiole red. 3. *ligator*, 5½—6½ lines.

B. Black; scutellum yellow; antennæ pale-ringed. - *maurus*, 5 lines.

The small quadrate areolet is a readily distinguished mark of this genus. The sexes of the common *M. ligator* are beautifully figured by Vollenhoven ('Pinacographia,' pl. 41, figs. 1, 2); figure 4 of the same plate is not *M. obnoxius*. *M. gladiator*, Scop., which should occur in Britain, is probably the species referred to by Réaumur, and figured on plate xxix., figs. 1—10, of his

Mémoires; this species is well figured by Ratzeburg and Vollenhoven; it is parasitic on various fossorial Hymenoptera (*Pelopæus*, *Ammophila*, *Trypoxylon*, &c.), and, according to Giraud, on an *Osmia*. *M. maurus*, Marsh., is shortly described at Ent. Mo. Mag., ix. 241, from five specimens in the British Museum from Heysham's collection. Several species of *Mesostenus* are recorded as bred from old wood, sticks, &c., where they were parasitic on various aculeate Hymenoptera, or xylophagous Coleoptera. The life-history of *M. obnoxius*, bred from year-old cocoons of *Zygæna filipendulæ*, has already been fully referred to (Entom. iv. 125; xiii. 17). It has since been bred from these cocoons by many correspondents; while Brischke has bred it from *Z. filipendulæ*, *trifolii* and *Ephialtes**, and Giraud from *Z. carniolica* (*onobrychis*).* Gravenhorst says that De Block bred many males of *M. ligator* from *Bombyx neustria*, Brischke bred it from *Zygæna trifolii* and *Cimex amerincæ*, and Giraud from *Acronycta rumicis*. This is not the only recorded instance of sawfly parasitism in this genus, as Goureau bred a species (*drapes*) from the globular, *Nematus*, willow galls.

NEMATOPODIUS, Grav.

- A. Black; thorax partly red; extreme margins of segments, scutellum, mouth, face, orbits and marks on thorax white; femora, front tibiæ and tarsi red; front coxæ and trochanters white. (Male and female.)
1. *formosus*, $3\frac{1}{4}$ —6 lines.
- B. Black; legs pale red; hind tibiæ and tarsi fuscous. (Male and female.)
ater, $2\frac{1}{4}$ — $3\frac{1}{2}$ lines.

Gravenhorst says this genus is intermediate between *Cryptus* and *Echthrus*, while Taschenberg remarks on its resemblance to *Ischnus*. *N. formosus* is given by Marshall as reputed British; we only know the single specimen in the National Collection. This species is well figured in Vollenhoven's 'Schetsen' (pt. i., pl. i., fig. 24). Taschenberg says, "In June and July of every year I find this beautiful species on a barked oak stump" (Hym. Deutsch., p. 58); this was at Halle. *N. ater*, Brischke, is alluded to as British at Trans. Ent. Soc, Lond., 1882, p. 145; it has since been bred in some numbers from *Emphytus cinctus* by Mr. T. Wilson, of York.

LIFE-HISTORY OF *NYCTEMERA ANNULATA*.

BY G. VERNON HUDSON.

LIFE-HISTORIES of New Zealand insects will probably interest some of your readers. Several have come under my notice during the past year, but the most complete I have as yet observed is that of *Nyctemera annulata* and its parasite, an account of which I here give.

This insect continues to pass through its stages without interruption during the whole year. Its development, however, progresses much more rapidly in the warm than in the cold season; it consequently is to be found in all states at any time, but the perfect insect is very scarce in the depth of winter. The eggs are semiglobose in shape, and of a whitish yellow colour; they are deposited on the leaves of various species of plants, the most usual being a light green kind of ivy with yellow flowers. They are apparently quite smooth and destitute of sculpture. When the young larva first emerges it is about 1 line in length, and as thick as a piece of ordinary thread. Unfortunately I have not observed the exact number of moults this larva undergoes, but should judge it to be about six. The following is a description of the caterpillar when full grown:—Length, about 15 lines; head black and shining, of a moderate size; body elongate, slightly tapering at each end; general colour black, with a reddish interrupted line down the back and one on each side; the articulating membrane of the segments slate-coloured, and also the ventral surface. In younger larvæ there are several slate-coloured lines extending the whole length of the insect, and thus dividing the black into squares. Round all the segments in the middle, at their greatest circumference, are a variable number of brilliant blue warts, out of which dense tufts of long black hair take their rise; there are no warts on the extreme ventral surface. Prolegs on the 7th to 10th and 13th segments; legs short, black and shining. This description applies very well as a rule, but the larva is subject to many slight variations. It remains in this state for nearly three months, or more, according to the season, and is very common, numbers being found on the different plants which constitute its food.

The only parasite which I have as yet observed attached to

this insect is a member of the Diptera, viz., *Chlorogaster ruficeps*. This fly evidently deposits its eggs on the skin of the larva, as it possesses no ovipositor, but simply that organ known as the tube, which is entirely unfitted to penetrate the skin. I have not, however, been fortunate enough to detect the insect ovipositing, and therefore speak only from supposition. The caterpillars infested are apparently quite as healthy and active as the rest; they even change into pupæ before the parasite emerges. A few days after the change the maggot eats its way out of the hard shell, and turns into a dark brown coarctate pupa, with scarcely any trace of articulations. The perfect fly appears in about six weeks; and is chiefly remarkable for the agility of its movements, and its very large pearly white scales, which render it very conspicuous. In the two cases which I have observed the numbers in the caterpillar were one and two respectively.

The pupa (of the moth) is from 6 to 8 lines in length; it is of a shining black colour, with many longitudinal rows of small yellow blotches on the abdominal segments; there is also a stripe of the same colour at the tip of the wing-case. It is enclosed in a slight cocoon formed of a mixture of silk and hair, and is attached near the ground to any firm object; from this the moth proceeds in the course of a month or six weeks (sometimes considerably longer).

The perfect insect is very common, being found profusely in the neighbourhood of its food-plants. It is of a uniform black colour, with the posterior margins of the abdominal segments yellow; there are also several yellow marks on the thorax. The anterior wings have a band of three cream-coloured spots near the lateral margin, which vary very much in size, and are frequently almost coalescent. The posterior wings have one round spot near the centre. Antennæ strongly bipectinate in the male, slightly so near the base in the female. Expanse from 12 to 18 lines.

This insect is diurnal in its habits, few being found about at night. Its flight is very feeble, and somewhat resembles that of the well-known British *Satyrus janira*.

Thackwood, Uakapuaka, Nelson, N.Z., October 3, 1882.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ARGYNNIS DIA NEAR TUNBRIDGE WELLS.—It will doubtless interest many of your readers to learn that this insect has been taken in this county. The fortunate captor was Mr. J. C. Arnold, of Hastings, who took the insect near Tunbridge Wells some years ago, but did not then know what a prize he had secured. He had supposed it to be *A. selene* or *A. euphrosyne*, but on comparison lately found it did not agree with either species, but agreed well with the very short description of *A. dia* in Coleman's 'British Butterflies.' The question now arises: First, is this specimen really *Argynnis dia*? Secondly, was the specimen taken near Tunbridge Wells? Both these questions may, I think, be answered unhesitatingly in the affirmative. That it is an example of *A. dia* is certain, for it agrees exactly with specimens sent to me by Mr. Meek for comparison. Mr. Arnold well remembers taking it, and observed at the time that the under side looked rather dull, faded he supposed, but did not in the least guess that it was anything out of the common.—E. N. BLOOMFIELD; Guestling Rectory, Dec. 30, 1882.

VANESSA C-ALBUM IN NORTH WALES.—In face of the recent evidence (Entom. xiv. 250) as to the probable extinction of this lovely species, I am pleased to record the occurrence of the autumn brood near Llandudno, and at Colwyn Bay. Whilst out collecting *Satyrus aegeria* for varieties, of which I netted several on Sept. 5th, I was delighted to meet with a fresh specimen of *V. c-album*. The locality was a rough piece of ground covered with blackberry, surrounded by an oak-wood, and I noticed for the first time that the insects were very fond of sailing round the tops of the trees, and alighting far out of reach, where it was most tantalising to watch them securely enjoying the sunshine. However, they occasionally descended to the bushes, like *Thecla quercus*, and I managed to box a fine series. They are very powerful on the wing, and a specimen once missed is not likely to be seen again the same day.—MARTIN J. HARDING; Cottisbrooke, London Road, Shrewsbury, Oct. 18, 1882.

COLIAS EDUSA IN ESSEX.—As it is desirable that the fitful appearances of this species should be recorded, I beg to state that I have seen three specimens this year (one of which I caught)

at Roxwell, near Chelmsford.—REGINALD W. CHRISTY ; Boynton Hall, Chelmsford, Dec., 1882.

PIERIS BRASSICÆ LARVÆ AT CHRISTMAS.—On Christmas Day, 1881, I obtained several larvæ of *P. brassicæ* feeding on broccoli in my garden, and they continued feeding for several days. I thought this rather unusual, and made a note of it, but set it down in my own mind to the excessive mildness of the season. On December 10th, 11th, and 12th this year I registered an average of twelve degrees of frost. Yet, after the thaw had set in on the 13th, I counted fifteen larvæ of *P. brassicæ* on the 14th, and have observed some daily up to yesterday, Christmas Day, 1882.—A. C. HERVEY ; Titchfield, Hants, Dec., 1882.

CHARIS ZABUA, *Gosse*, = LEMONIAS TENELLUS, *Burm.*—In my article in the 'Entomologist' for September, 1880, entitled "The Butterflies of Paraguay and La Plata," I described (Entom xiii. 202 ; pl. 2, fig. 5) and figured a small species which I named *Charis zabua*. I believe, however, that it is identical with the insect previously described and figured by Dr. Burmeister, in the 'Descr. Phys. de la Rep. Arg.,' p. 224, Atlas, pl. viii., figs. 8 A, B, under the name *Lemonias tenellus*.—P. H. GOSSE ; Torquay, January, 1883.

LEPIDOPTERA OF THE CHANNEL ISLANDS.—Having lately been on a visit to the Channel Islands, I was much surprised to find Lepidoptera very scarce there. During our stay, from September 27th to October 10th, we observed the following species only, none of which could be called numerous:—*Pieris rapæ*, *P. brassicæ*, *Vanessa atalanta*, *V. urticæ*, *Satyrus ægeria*, *Chortobius pamphilus*, *Polyommatus phlæas*. Besides these few species we saw the larvæ of *Bombyx rubi*, *Hadena pisi*, and a species of *Lithosia*. *Satyrus ægeria* and *Chortobius pamphilus* were fairly common. One would expect to find such species as *Colias edusa*, *Gonepteryx rhamni*, *Vanessa cardui*, and *Lycæna icarus* still on the wing at the beginning of October in the Channel Isles, as the season lasts longer out there, but not a vestige of them did we see. Was this scarcity of Lepidoptera owing to a day or two of rough weather we had, the time of year, or to the general paucity of insects this season ? I may mention that there were plenty of flowers in the gardens. We found woodbine still in flower in the hedges, and the ivy in the lanes was also in bloom.—ALFRED SICH ; Burlington Lane, Chiswick, Oct. 19, 1882.

LEPIDOPTERA NEAR CROYDON.—The past season for Lepidoptera, especially Diurni, has been an exceptionally bad one in this neighbourhood, Croydon. I will give, however, an account of some which I have taken this year. *Gonepteryx rhamni* has been fairly plentiful, both the hybernated and autumn broods. *Anthocharis cardamines* was very abundant in a lane adjoining Chattenden Woods, Kent; I took twelve males within a space of a few yards in a few minutes, and out of sixteen taken there was one female only. I think the females seldom fly, which accounts for their scarcity compared with the males. Although so common in the above-named place this year, this species has been rare about this locality. *Satyrus semele* used to occur abundantly on a piece of rough chalky ground near Croydon, but during the last three seasons it has not been seen; the same with *Setina irrorella*, which was formerly very plentiful. *Lycæna adonis*, not one this season. A very few *L. alexis* and Hesperidæ were observed. *Vanessa io*, from some cause, seems to be almost exterminated; this year I have not seen a single specimen. *V. atalanta*, a few seen; not one *Pyrameis cardui*. *Vanessa urticæ*, abundant everywhere; I reared several dozen this season for varieties, but not one differed from the type. On July 1st, a splendid day, in company with a friend, I visited three different places, and hardly a butterfly was to be seen, excepting a few *Satyrus janira* and *Cænonympha pamphilus*, which is a fair average of observation during many days' collecting this year. *Lycæna corydon* and *Argynnis euphrosyne*, as usual, were very abundant; the former on August 12th in profusion, the females in much greater quantities than the males, the opposite being generally the case. *Brephos parthenias* was early and abundant, fully out on March 13th and 17th; I took a large number each day; on the latter day I saw one hybernated *Vanessa polychloros*, the only one this season. It seems to be a rare species in this neighbourhood; while at Ipswich, in 1872 and 1873, it was one of the commonest butterflies; since that time I have only taken one in this locality. The following captures may be worthy of record. Last year, July 7th, I took a fine female *Stauropus fagi*, at rest on a Scotch fir trunk. One larva of *Notodonta chaonia* from oak, which emerged an imago on April 12th last. I also captured, last May 13th, *Sesia culliciformis*. I tried assembling for *Saturnia carpinii* several times in April and beginning of May last, but not one was to be attracted

by the lady's charms. *Satyrus hyperanthus* and *S. tithonus* have disappeared from some places where formerly they occurred commonly. I have two *Dicranura vinula* and *Acronycta mega-cephala* pupæ, which have been in that state since last July twelvemonths, and are as lively as ever, which, I think, is unusual for the species. I should like to hear if others have found this the case with any other pupæ this year?—FRED. W. FROHAWK; Upper Norwood, Surrey, December, 1882.

LEPIDOPTERA IN SOMERSET.—I beg to send you a report from Somerset as to the past season's doings. I have collected insects for more than forty years, and do not recollect one season in which they were so few, and, although at the commencement of the summer some of the more common were fairly plentiful, the later year failed to carry out the earlier promise, for at sugar only two insects were at all plentiful, *Phlogophora meticulosa* and *Polia flavocincta*. Not only were the scarcer *Xylina semibrunnea* and *X. petrificata* absent, but such common visitants as *Triphæna pronuba*, *T. orbona*, *Mamestra brassicæ*, *Agrotis segetum*, &c., were either very few or entirely absent. *Cerastis spadicea*, which generally occurs by dozens, was this year represented by two specimens, both taken in November.—H. W. LIVETT; Wells, Somerset.

RETARDED PUPATION OF BOMBYX QUERCUS.—On the 17th December last I reared a specimen of *Bombyx quercus* which had remained in the pupa condition since 1879. This seems very singular, and may account to some extent for our late bad seasons. I have still two pupæ of 1881 alive and well. It would be interesting to know if the same thing is occurring in a state of Nature.—C. K. TERO; B 32, Kent Street, Grimsby, Jan., 1883.

CUCULLIA ABSINTHII IN SOMERSET.—While collecting at Minehead in August, 1881, I discovered a large number of the larvæ of this species feeding on *Artemisia absinthium* in a lane near the village of Alcombe. In three or four visits I collected thirty-four, about one-fourth to three-fourths of their full size. On the 8th of September, when I had to return to London, four had burrowed; the rest were carefully taken to town, with a large quantity of the *Artemisia* potted, but every one died. This is perhaps due to the London atmosphere, but more probably to the fact that the flowers of their food-plant, which they alone ate, were almost exhausted. Of the four remaining cocoons, two were

dead by the spring, and the other two did not emerge. On the 13th of September in this year I sent them to the Insect House at the Zoological Gardens to be forced, having no means of doing so myself. One emerged on the 30th of November, after a pupal state of fifteen months; the other is still alive, but has not yet emerged. Having found no satisfactory figure or description of the larva, I append the following:—The full-grown larva is stout, with the segmental folds deeply indented. The head is greyish, freckled with green, and is rather narrower than the 2nd segment, which is pale grey, mottled with brown. The ground colour is green. On each segment, and on either side of the dorsal line, there are two tubercles arranged transversely on the 2nd, 3rd, and 4th segments, and in a trapezium on the others, as in the larva of *Cosmia trapezina*; there are also two in the spiracular line on each segment. All these emit a single bristle. The dorsal line is pale grey, widened towards the hinder part of each segment. Each tubercle is in a brownish area, and the two front ones on each segment are connected with the hinder pair on the preceding segment by an indistinct green stripe, rather darker than the ground colour. The spiracles are pale, with a dark ring, and are very inconspicuous. There is a pure white stripe beginning at the front of each segment in the spiracular line, and extending obliquely to the claspers, which, with the legs, are white and resemble porcelain. The ventral surface is streaked and mottled indistinctly with white. The larva feeds openly by day on the flowers of *Artemisia absinthium*, which it greatly resembles. It eats only the receptacles, and makes a very large pile of *débris* under its food. It sits when at rest with the 5th segment humped, and, if disturbed, it jerks itself from side to side, or rolls in a loose ring with the head and tail protruding.—W. F. BLANDFORD; 71, Grosvenor Street, London, December 30, 1882.

SUPPOSED OCCURRENCE OF *ANARTA MELALEUCA* IN SCOTLAND.

—In a very carefully-formed collection of British Lepidoptera that has recently been purchased by me appears a male of this species, placed in lieu of its congener of that sex, *Anarta melanopa*; the remaining series (five) being females of the latter. Unfortunately the gentleman who took them is deceased, but I am informed upon unquestionable authority that all the Scotch insects in the collection were taken by himself about eight years ago. The fact is worth recording in case the species should again be

found by the northern collectors.—WILLIAM WATKINS; Shepherd's Bush, London. W., Jan. 3, 1883.

DESCRIPTION OF THE LARVA OF PETASIA NUBECULOSA.—I have never seen this larva alive, but some time ago Mrs. Cross, of Appleby Vicarage, Brigg, sent me a preserved example (one of six she had obtained from Rannoch), which she said was a very good specimen. As such was evidently the case I took down a description of it as follows:—Length towards two inches, and of average bulk; the head has the lobes rounded, and is slightly narrower than the 2nd segment; body cylindrical, and of about equal width throughout; the skin is rather deeply wrinkled transversely, and the wrinkles, with the large raised tubercles, together with a prominent transverse ridge, surmounted with two tubercles on the 12th segment, give it an uneven appearance; a short hair springs from each tubercle. The ground colour is a beautiful bright pale green; head of a slightly darker shade, except the space above the mandibles, which is pale greyish green; on each side of the 4th segment is a rather broad oblique yellow stripe, and there are indications of similarly coloured stripes, but very much fainter, on the following segments; tubercles bright yellow; spiracles large, oval, greyish white, surrounded with intense black; legs light brown, green at the jointal divisions; prolegs green, tipped on the outside with very dark chocolate-brown. Feeds on birch.—GEO. T. PORRITT; Huddersfield, Jan. 2, 1883.

[We are obliged to our correspondent for this description, but doubt the advisability of describing larvæ of lepidopterous insects from preserved specimens.—ED.]

EBULEA STACHYDALIS IN THE ISLE OF WIGHT.—Last July I captured a fine female *Ebulea stachydalis* here, which I gave to Mr. Bond. I took another specimen eight years since, which I had mixed up with *E. sambucalis*, and there most likely it would have remained had not Mr. Dale, of Glanvilles Wooton, recognised it amongst the others three years since. The past year proved the worst for collecting that I have known during the forty years I have collected here. I met with a fair number of *Acherontia atropos* in the larva and pupa state, but all died, although I treated them in exactly the same way as I did some others thirty years since. About that time I bred 130 in one season from larvæ and pupæ found in Freshwater.—H. ROGERS; Rosebery House, Freshwater, Isle of Wight, Jan. 10, 1883.

YPSIPETES ELUTATA.—Present observations of mine bearing on the controversy engendered by Mr. J. Jenner Weir's notes on *Ypsipetes elutata* as a heath-feeder, may interest the readers of the 'Entomologist.' In the month of August, 1881, I was staying at Glendevon, a mountain hamlet in Perthshire. Being out one evening on a heath-covered hill in that neighbourhood I observed that *Y. elutata* literally swarmed, and that the prevailing form was smaller and darker than that found in the low-lying parts of the same district. There can be no doubt that heath is the food-plant, as the bilberry does not grow there, and there are no hedgerows and few trees of any kind, except fir, and even these are at a considerable distance from the place noted. Again, about the end of June last year, I was out sugaring with a friend near here, but, the night proving unproductive, we commenced to search the ling and bilberry, of which there is a heavy undergrowth, for larvæ. Two species occurred in abundance, and these were *Cidaria populata* and *Ypsipetes elutata*, of each of which we took at least three dozen, the former invariably from bilberry, and the latter almost invariably from ling (*Calluna vulgaris*), thus proving that in this district *Y. elutata* prefers the ling to the bilberry.—JAMES HINCHCLIFFE; Stirling Street, Alva, Stirlingshire, N.B., January 15, 1883.

REMARKS ON REARING LEPIDOPTEROUS LARVÆ IN CONFINEMENT.—A great deal has been written from time to time on rearing larvæ in confinement, and several methods have been advocated as the best. It is an undoubted fact that larvæ of different genera and also of different species require various kinds of treatment. Some are brought to maturity with comparative ease, whilst others perish, though watched with the greatest attention, and treated with the utmost care. That very excellent and able paper by Mr. C. G. Barrett in last month's Ent. Mo. Mag. (vol. xix., p. 172) on rearing *Tortricidæ* will show how difficult many of that family are to rear. It is not my intention in this place to dwell upon the difficulties of rearing larvæ, but only to explain the mode I adopt when rearing them, and the best means of keeping them healthy and within bounds. The tedious process of tying muslin or linen over flower-pots and jars is by my plan avoided, and consequently much time saved. I keep the larvæ in wide-mouthed glass bottles; those in which the anchovies of the Compagnie de la Méditerranée are sold I think

are the best, and for many years I devoured multitudes of those delicious little fish, both for breakfast and at dinner, not so much from the desire of satisfying my epicurean taste, as for obtaining the bottles afterwards for larvæ. These glasses are about $6\frac{1}{2}$ in. high and $3\frac{1}{4}$ in. diameter across the top, and, as they are of clear glass, the habits of the larvæ can be observed with great facility. At the bottom I place a sufficient quantity of baked sand, damp enough to suit the larvæ, but not so much so as to cause mould; on this I place baked moss, more or less, according to what I consider the requirements of the larvæ; then comes the food-plant, and this is not unfrequently planted in the damp sand. But now comes the plan adopted instead of tying on the muslin or linen covers: I procure a number of wire rings, made of the ordinary fencing-wire, and these are covered with tarlatan, muslin, net, or any other material, according to the texture required; these rings, when covered, are most convenient to use, as they have only to be taken off and put on, and the ring is made of such a size as to fit easily over the mouth of the jar; and, if a thicker and heavier wire were used in their construction, and they were made to fit well, I believe they would baffle some of Mr. Barrett's *Tortricidæ*. In the case of some of those larvæ, such as *Cossus ligniperda* and others, which cannot be kept under restraint by cotton or linen fabrics, I have the rings covered with perforated zinc, and for smaller larvæ, such as the *Sesiidæ*, &c., with very fine iron-wire gauze.—OWEN S. WILSON; Carmarthen.

A WASP IN WINTER.—If, as I believe, it is a rare occurrence. some of your readers may be interested to hear that a queen wasp came into the house last Friday (Dec. 29th), and must have remained concealed somewhere, for early the next morning she killed herself by flying into the flame of a candle on the dressing-table. Friday was a very wild but dark and rainy day here, not one on which I should have expected to see a wasp about even some months earlier in the season.—(Miss) ELEANOR BAYLEY; Hurstpierpoint, Jan. 1, 1883.

[The female wasp had no doubt been hibernating in the neighbourhood, and had probably been disturbed while in a semi-torpid state, brought about by the exceptionally warm weather we have lately experienced in the South of England.—ED.]

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NOTES ON THE GENUS *HEMIMACHUS*, RATZ.

BY JOHN B. BRIDGMAN.

THIS genus, which was separated from *Hemiteles* by Ratzeburg (Ichn. d. Forst. iii., 157), has in reality no right to a separate existence, as the insects of which it is composed are only the males of *Pezomachus*. It is an extremely difficult group, from the imperfectness of the older original descriptions. I shall in this paper consider the species quoted in Mr. Marshall's 'Catalogue' of British Ichneumons.

The first is *H. palpator*, Gr., which is given as the male of *P. trux*, Foerst. There is little doubt that under the heading of *Hemiteles palpator* several male *Pezomachi* are mixed; Ratzeburg says (*l. c.*) that the male which he describes as *Hemimachus fasciatus* is probably var. 1 of *H. palpator*, Gr., male; it certainly agrees fairly with the description, which is only as to colour, but after this short description he says, "Cætera sicut in maribus plurimis genuinis," showing that they vary. The next species which Ratzeburg describes (*H. pezomachorum*) he says is nearly allied to *H. palpator*, Gr.; he also describes another species, under the name of *H. variabilis*, of which Hr. Brischke, says (Schrift. d. nat. Ges. in Danzig, 1876) is *Pezomachus cursitans*, male = *variabilis*, Ratz., = *palpator*, Gr.. Unfortunately, although Ratzeburg gives a good description of the colour, he gives none of the structure, or even says of it, as he does of the other two species mentioned, that it is like *H. palpator*, Gr., but he gives Hr. Brischke as the authority, he having bred the two varieties described from *Psyche* cases. Ratzeburg

says one has the thorax partly red. This variety of coloration is not mentioned by Gravenhorst or Taschenberg ('Die Schlupf-wespen-familie Cryptides'); the latter only describes one of Gravenhorst's males: this certainly agrees with Brischke's description, but neither makes any mention of the pubescence on the abdomen, whether dense or scattered, which is unfortunate, as this appears to be a good specific characteristic of the female, and will probably be so in the male also. In Mr. Marshall's collection the male *Pezomachus*, under the name of *H. trux*, Foerst, which in his catalogue is given as *H. palpator*, Gr., male, agrees fairly well with *H. palpator*, but from the shortness of the descriptions it is impossible to say if they really are the same species. I have in my collection four males, which agree very well with all these descriptions; they were bred from two hosts, two from one and two from the other, and were given to me by two entomologists; although very much alike they are, I have no doubt, two distinct species, but either would answer to any of the above descriptions. Unfortunately no females were bred with them, or from their obscure appearance and fleetness were not detected.

Associated with Mr. Marshall's male *Hemimachus trux* were three females mounted on card, and from the writing beneath evidently came from Mr. J. E. Fletcher, of Worcester, and I have no doubt formed part of the eight females bred by that gentleman from *Coleophora vibicella* (see Ent. Mo. Mag., viii., 162). On examination I think Mr. Marshall must be mistaken in the species, or at any rate the association of the male and female is not satisfactory, as of the three females two belong to one species and the other to a very distinct one; of the two the pubescence on the abdomen is scattered, whereas Foerster says of *P. trux* the pubescence on the abdomen is dense; these appear to me to come near *P. insolens*, Foerst. The other specimen has the pubescence on the abdomen dense, but has not, as Foerster says *P. trux* has, the spiracles on the first segment of the abdomen projecting very much; it appears to me to come in Foerster's Div. iii., and just before *P. fallax*. I have taken this latter species near Norwich, and can make it agree with none of Foerster's species. There being two females mixed, it is impossible to say to which the male belonged.

The next species occurring in the catalogue is another

confused species, *Hemiteles rufocinctus*, Gr., which Mr. Marshall gives as = *Hemimachus rufocinctus*, Ratz.; this Hr. Brischke (*l. c.* 1878, p. 203) denies, and says they are different species, and that *Hemimachus rufocinctus*, Ratz., is the male of *P. instabilis*, Foerst. The insect which stands in Mr. Marshall's collection as *H. rufocinctus*, is according to Taschenberg (*l. c.*) not *Hemiteles rufocinctus*, Gr., and it certainly is not *Hemimachus rufocinctus*, Ratz., but quite a distinct, and I believe undescribed, species. *Hemimachus rufocinctus*, Ratz., has a finely-bordered, elongate, pentagonal, supero-medial area on the metathorax, and the abdomen clothed with scattered pubescence. *Hemiteles rufocinctus*, Gr., according to Taschenberg, has two transverse lines on the metathorax, but no supero-medial area, it wanting the longitudinal lines to complete it; he does not mention the state of the pubescence on the abdomen. Mr. Marshall's specimens have a very short metathorax, without a trace of a supero-medial area, and only the posterior transverse line present, and that only defined at the sides; the pubescence on the abdomen is very dense, differing thus from the true male and female of *P. instabilis*. This species has also been taken by Dr. Capron, to whom I am indebted for a specimen.

The next species, *H. fasciatus*, Fabr., I have already mentioned; there is no doubt about this species, it having been so frequently bred.

The last, *Hemimachus avidus*, Foerst, has amongst its synonyms *Hemimachus albipennis*, Ratz. (*l. c.*) as a winged form. Hr. Brischke says (*l. c.*, 1876) that he "bred *Agrothereutes hopei*, Gr., from cases of *Psyche viciella*, and later a *Hemimachus albipennis*, Ratz., and on comparison there is no doubt but that they belong to the same species." I do not consider this quite conclusive, as often various parasites are bred from the same host, as proved above; and generally speaking the male is the first, not the last, to appear. Hr. Brischke also says probably *A. hopei*, Gr., is only a variety of *A. abbreviator*, Gr. Thomson (*Opusc. Ent.* p. 504) under the name of *Spilocryptus dispar*, Thoms., says the female = *Pezomachus* = (*Agrothereutes*) *abbreviator*, Gr., and the males = *Cryptus pygoleucus*, Gr.

Having in the above remarks endeavoured to show the difficulties that enshroud the genus *Pezomachus*, I would earnestly plead to the breeders of Lepidoptera, to assist in clearing up

these difficulties. The case-bearing larvæ (*Psychidæ*, *Coleophoræ*, &c.) appear to be special favourites of these parasites. The obscure appearance of the majority of the small *Pezomachi*, both male and female, renders close observation necessary to detect them when they have been bred; I have no doubt many escape without having been noticed at all, especially the females, which look like small ants. The best way to secure them would be to remove the cases, after the larvæ have finished feeding, into glass-topped boxes or corked bottles. I shall be very thankful for any specimens that may be sent to me, and should like to have them as soon after death as possible; if packed in a small piece of paper damped with water, to which a trace of carbolic acid has been added, they would reach me in a condition which would enable me to set them carefully, without which they are almost useless.

69, St. Giles's Street, Norwich, Feb. 1883.

REMARKS UPON CAUSES OF SCARCITY OF LEPIDOPTERA.

BY W. FRANCIS DE V. KANE.

I HAD hoped that ere this some entomologist of note would have offered some explanation of the phenomenal scarcity recorded from all quarters during the past season.

The following suggestions, however, are thrown out to invite comment.

My experience in several parts of Ireland, and that of correspondents (notably Mr. Russ, of Sligo, who has obliged me by very full notes of his captures in that neighbourhood), harmonises remarkably with that of most English collectors. When it is remembered that the preceding summer of 1881 was rather more genial and sunny than usual here, and the harvest abundant, while in England the reverse was the case, it is evident that the general failure cannot be accounted for by the absence of sunshine at that period.

The open winter of 1881-82 was, however, common to the whole of the United Kingdom, and doubtless slugs, centipedes, beetles, and birds wreak more havoc in mild winters on exposed and unprotected pupæ, while frost is innocuous to them. However, there are parts of Great Britain, such as the Isle of Man,

South Devon, and the South and West of Ireland, with an abundant entomological fauna, where the winter climate is normally such as that in question. This cause could, therefore, in any case only account for the comparative dearth of some species, while the Hepialidæ, and such species as *Charæas graminis*, which have subterraneous larvæ and pupæ, would be as numerous as usual (as was my own experience, and that of others; see Mr. Corbett, in Entom. xv. 236); yet many species which have subterraneous or well-protected pupæ, such as *Dicranura vinula*, &c., were also abnormally scarce. We must, therefore, look for a further cause.

Cause 2. There was one characteristic of the summer of 1881, as well as the succeeding autumn and spring, which I think goes a long way toward explaining the dearth of (1st) such forest insects as have arborivorous larvæ (for it is, I think, in this section the scarcity seems to have been most marked), and (2ndly) of some coast insects in certain exposed localities: I refer to the succession of high winds and storms. For such larvæ as feed exclusively on tree foliage, when shaken down, perished (with the exception of Tortricidæ, whose rolled-up shelters would protect them,—*T. viridana*, for instance, is reported to have been very abundant), whether in summer, autumn, or after hybernation in the spring; while such as live on bushes or low-growing plants, or on such trees as the willow, sallow, alder, or birch, which are frequently found on bushes or in hedgerows, were, on suitable nights, not only plentiful, but unusually so. *Bryophila perla* (Mr. Salwey, Entom. xv. 198) and many of the lichen-feeders were reported as abundant; Tineina pretty plentiful, *teste* Mr. South (Entom. xv., pp. 154, 155), Mr. Corbett (p. 236), Mr. Tugwell (p. 205, *Lithosia pygmæola*), Mr. Bird (p. 235), Mr. Atmore (xvi., p. 12), and others. Marsh insects and internal feeders I also noticed were in normal abundance on fine nights. Mr. South also indicates another result of the stormy season (p. 154), which destroyed not only the tree foliage in an exposed locality, but also the surrounding herbage. Mr. Tugwell illustrates the same in his complaint that he could find but few flowers and seed-pods of *Lychnis* or *Silene* at Dover. I observed the same at Howth and the Isle of Man, where the *Silene maritima* had likewise suffered by the wind. This accounts for the rarity of *Dianthæcia cæsia* and *D. capso-*

phila there, both imago and larva (Mr. Thorp speaks of *Silene inflata*, sic? p. 237); and at Douglas I learnt that none had been taken at the lighthouse in consequence of the wind. I took, however, larvæ of *Sesia philanthiformis* in July, Mr. Thorp having failed to find it in June, which illustrates another peculiarity of the season, to which I shall again refer. Lastly, I note that Mr. M'Rae speaks of "extensive defoliation in the New Forest" at Midsummer, 1881. To this cause, therefore, I attribute chiefly the actual scarcity of Lepidoptera, which, as I noticed, was most marked in certain tree-feeding species.

Cause 3, of the want of success of most collectors, I think, was the unusual atmospheric conditions throughout the season of capture, coupled with the derangement of the usual time of appearance, for the unusual warmth of the spring induced a very early apparition of insects; and, on the other hand, about the middle of June a sharp frost occurred, which ushered in a period of cold, ungenial, wet weather, causing the summer imagines to be as late as those of the spring were early, and the larvæ of slow development. I endorse, therefore, Mr. Bull's experience (Entom. xv. 192), that of the Rev. Seymour St. John, and others, in spite of Mr. Carrington's evidence to the contrary from Huntingdonshire. On several nights in May I took large numbers of Macros at sugar, while on June 3rd I captured ninety specimens of nineteen species, out of twenty-five species observed, and left off from sheer weariness before the flight had shown signs of abatement. Bearing the above in mind it is easy to see how excursionists or temporary visitors to well-known localities would be baffled by the delay or precocity of emergence of expected species. Moreover, the character of the season was, as Mr. South remarks, "eccentric" and fickle, suggesting the possibility of electrical disturbance as being a factor in the results, as doubtless it is in other domains of zoological experience. I found that only an average of one out of eight nights was fairly productive, either at light, sugar, or ivy, throughout the season, even where there was no failure of many species. A week's visit to a locality might, therefore, be no sort of a criterion of failure or abundance of Lepidoptera there. As to Rhopalocera the cold and wet of the summer prevented their flight, and that of day-flying moths, such as *Stenia irrorella*; but in the spring there seems to have been no scarcity. Mr. M'Rae's experience at Bournemouth, however,

baffles me, and may, I venture to suggest, have arisen from local causes; the rather as I see he reported a like scarcity there during the latter portion of the season of 1881. He writes:—"Both herb- and tree-feeders have been equally scarce, and, when the result of one's collecting is *nil*, it is scarcely possible to institute a comparison."

Sloperton, Kingstown, Co. Dublin, February, 1883.

NATURAL LOCALITIES OF BRITISH COLEOPTERA.

BY REV. W. W. FOWLER, M.A., F.L.S.

NO. XII.—GENERAL BEATING AND SWEEPING.

WE now come to rather a wide part of our subject, which cannot be much more than touched upon,—general beating and sweeping. In numerous forms it has already come in in other papers, but yet requires a few words for itself.

The best form of sweeping-net (a deep gored net, furnished with small rings round the edge that slip over the large metal ring which screws into the stick) has already been described (Entom. xv. 61). An umbrella serves all the purposes of a beating-net, but it is better if the whole space just above the ribs is covered with calico or some light material, as else minute species will often get into and under the ribs, and be lost.

In sweeping and beating several circumstances have to be taken into account,—the time of year, the time of day, the general temperature, the direction of the wind, the kind of ground, and the flora of the locality.

As a rule nothing much is got by sweeping or beating before April, certainly not in the northern counties; occasionally, however, a warm day will tempt out hybernating species. On March 18th, last year, I swept a considerable number of Staphylinidæ, Halticidæ and Curculionidæ, and a few Hemiptera, in a wood near Lincoln. Sweeping is productive much later in the year than might be expected: on a foggy afternoon in autumn—when everything has been soaked with moisture, and the sweeping-net has been as wet as if dipped in water—I have swept up many good things in Bretby Wood, near Repton; *Anisotoma grandis*, perhaps, being the best species I ever took in this way.

From the last week in April to the first week in July, and again from the last week in August to the last week in September, are, perhaps, the best times of year for beating and sweeping. Even in the best localities the month of August, especially the beginning of it, is most unproductive; and I have found in the New Forest that at this time hardly enough was obtained to be worth the working; the reason of this evidently is that the first broods have disappeared, and the second broods begin to come again at the end of August. The best time of all may be said roughly to be from May 20th to June 20th, and a day at this time will often prove of more value than a week at any other.

As regards the time of day it is best to begin early; it is rather inconvenient to get one's net thoroughly soaked with dew to begin with, but the good species that may be obtained make it worth while to carry another net, although this is not necessary, for as soon as the dew disappears the net dries by the very act of sweeping. As it gets on towards mid-day, and the sun becomes hot, the beetles disappear; and my experience has been that on a hot day in the middle of summer it is useless to sweep between half-past eleven and three or four o'clock, although of course some things may be found in shady places. About four matters begin to improve, and go on getting better and better until an hour before sunset; from this time, as long as it is possible to see, a rich harvest may be reaped in a favourable locality; Carabidæ, Staphylinidæ of all sorts, Scydmanidæ, Trichopterygidæ, and species of all kinds come out in the evening in profusion. Some beetles, such as *Bryaxis helferi*, are hardly ever taken except just at dusk; but the species that are most sought after at this time are the Anisotomæ, which seem almost entirely crepuscular, and may sometimes be found in fair abundance at sundown in a spot which has not produced a single specimen during the whole preceding day. *Colons* should also be looked for at this time. I have beaten *Colon brunneum* from an aspen tree on a summer afternoon, but this was probably accidental. Dr. Power, who has perhaps taken more of this very rare genus than any other collector, says that they are to be taken at sundown by sweeping wild strawberry plants and other short herbage in the clearings of woods. I think it very probable, from two or three captures of species on the open sides of the Malvern Hills that have come under my notice, that several

members of the genus occur on barren heaths or waste places that are never touched by the sweeping-net. There is no doubt that some rare species may be found in such localities, and hence, probably, their rarity, for very few people think of sweeping the centre of a barren-looking field. I remember the late Mr. Garneys telling me of a rare species (I think one of the Mordellidæ) that he took in this way, and brought to London just as it was on the point of being erased from the British list.

Very few collectors have ever tried the twilight before sunrise; although many species might then be found, it is probable that it would not prove nearly so good a time as the twilight after sunset, as in the latter case the ground is heated, in the former it is chilled. There is, however, a very productive time during which hardly any beetle collectors think of working, and that is the night; lepidopterists know well that Carabidæ, Longicorns such as *Prionus*, *Helops cæruleus*, *Eryx atra*, and others, come freely to sugar. *Opilo mollis* owes its rarity probably to being, as a rule, a species that comes out at night, when it may be taken on elder and other trees. The Carabi are always prowling about by night, and on this account are so often found crushed in the pathways; it is rather the exception than the rule to see a large *Carabus* abroad in the daytime; actual sweeping, however, at night will soon prove how many species are abroad. It is a very good plan in many localities to sweep promiscuously in the dark with a large deep net, and then tie it up tightly, and examine its contents at leisure next day. Mr. Matthews and Mr. Crotch on one occasion took *Stenus opticus* (then very rare) in abundance by adopting this plan, although they could not find a single specimen during the daytime. One of the very few known British specimens of *Sesia allantiformis* was found by Mr. Matthews in his net one morning after sweeping in this way on the previous night, so that this may be a hint to lepidopterists as well, although they are nocturnal workers by profession already.

With regard to weather and temperature a warm day after rain is the best; a little moisture is necessary, and a warm damp day, with no sun at all, will sometimes bring out such sun-loving species as Longicorns in abundance, and everything else in proportion; dry heat is unfavourable; a south or west wind is almost indispensable; a north or east wind is fatal to success in

almost all cases. Although I have found a good many species in a sheltered spot in spring when the wind was in the east, yet, on the other hand, on a hot day in June or July, with a light east wind blowing, I have hardly been able to find a single insect. A hot sun, with a west wind after a heavy shower of rain, when everything begins to steam, will bring up all kinds of insects in profusion.

As to the kind of ground, every collector will soon find out for himself the most productive spots in his own locality, and know exactly how to work them; the great secret is not to be in too great a hurry to try fresh places. If a good beetle is found in any place (and this, as has been said before, applies to all collecting) there are probably more not far off, and a diligent and careful examination will often reveal the habits of the species, and many may be taken. As a rule, open and grassy places in woods, the sides of hedgerows, the margins of streams and ponds, open spaces and gullies close to the coast, especially strips of grass on the edges of cliffs, are the best to work; beetles do not like to be shut in where they cannot get sun and air. This applies almost more strongly to beating, for which there is nothing better than the low growth that shoots from stumps of trees in the first, second, or third year after cutting: the *Agrili* like the second year after cutting; beetles like *Apoderus coryli* the second or third year; and the *Cryptocephali* about the fourth year. Full-grown trees are said not to produce much, but this is probably because they are hard to work. The Scotch fir and the oak certainly abound in species, and I have heard of numbers of *Saperda scalaris* having been obtained from high aspens by the novel expedient of tying a stone to a cord, and flinging it over the top boughs and so shaking them. Some species are found by sweeping under particular trees, but these are often accidental, being properly attached to the tree itself; still this method is useful, as it may lead to the examination of the tree for the species.

No collector can sweep or beat satisfactorily without some knowledge, however small, of Botany. . As far as beating goes it takes a very little while to discover the species that affect different trees; but with sweeping it is a much harder matter. It is impossible to beat many trees at once, although in beating a high hedgerow a little confusion may arise as to the tree or bush that

the species came from. In sweeping, however, over any extent of ground it is next to impossible to tell from what plant a particular species has been obtained, but a little knowledge of the plants to which groups are attached will often put the collector on the right scent, and enable him to take a large number of a good species.

Many groups, especially Curculionidæ, are fond of nettles. The Cruciferæ are particularly affected by certain Chrysomelidæ and also Curculionidæ, especially *Ceuthorrhynchi*, *Poophagi*, *Phytobii*, and others. The groundsel (*Senecio*) is a favourite food-plant for species of *Thyamis*; the Geraniaceæ for *Cæliodes*; the clovers and trefoils for Sitonidæ, and above all for Apionidæ; and the Verbascum for the *Cionus* (I have known several of the species taken on one plant). Several small *Ceuthorrhynchidii* (*C. Dawsoni*, *C. frontalis*, and *C. troglodytes*) live on different species of Plantago, while the Lemnaceæ and other water-plants must be searched for *Donaciæ*; certain Cyperaceæ for some of the *Erirrhini*, *Telmatophili*, &c.; the Alismaceæ for *Bagoi*; and species of *Carduus* for *Larinus*, *Rhinocyllus*, &c. *Lixi* and others inhabit the stems of the thistles, and *Mononychus* the seed-pods of *Iris pseudacorus*; the Longicorns may be found in abundance on Umbelliferæ in woods, and certain *Cryptocephali* and *Mordellæ* on Hieracia; while the Labiatæ, especially *Lamium album* and *Stachys sylvatica* must be carefully examined by all collectors who wish to get together the obscure genus *Meligethes*, although certain good species of this genus are attached to the Ranunculaceæ, especially *Caltha palustris*. It must not be supposed, however, that the species are attached to all members of a family of plants; they are very discriminating, and, as a rule, each species of beetle is attached to its particular species of plant, and not even to a particular genus.

A collector should never work quite indiscriminately, although he must always do so to a certain extent. He should always set a particular class or genus before him, and find out as much as he can about its habits, and the trees or plants to which it is attached. He should then work particularly for the species belonging to it, and will find himself well rewarded, not only by taking these, but also by often taking many more species of other genera than he would otherwise obtain by aimless general collecting.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS DAPLIDICE AND HYDRILLA PALUSTRIS AT CAMBRIDGE.—Last July Mr. Chas. C. Baker, of 72, King Street, Cambridge (and formerly Master of the King Street Schools in that town), was good enough to show me the collection of butterflies and moths formed by him some years ago in that neighbourhood. Amongst them was a fine specimen of *P. daplidice* taken by him near Newmarket on the 5th August, 1868; also three *cænosa* bred from larvæ taken by him at Wicken. An unset *Noctua* also attracted my attention as belonging to a species unknown to me. This he very kindly allowed me to take away and identify; and a comparison with the specimen in the late Mr. Allis's collection in the Museum at York showed me at once that it was a male *H. palustris*, a conclusion which Dr. Battershell Gill has since verified. Mr. Baker has been so exceedingly kind as to give me both the Bath White and the *palustris*, as well as a fine specimen of *cænosa*.—A. F. GRIFFITH; Sandridge, St. Albans, Jan. 30, 1883.

NOTES FROM WOTTON-UNDER-EDGE AND NEIGHBOURHOOD.—The season of 1882 has been generally described as an unfavourable one for the lepidopterist, and the few notes from this locality will not be very different from those sent from other parts; but as they are very short, perhaps you will be able to find a space for them, if worthy of insertion in your pages. There has been a great diminution in the number of *Argynnis paphia*; all the pupæ found in June were infested by ichneumons (R.C.L.P.) On the other hand, *A. aglaia* swarmed on the hills in August, some of the females being exceedingly rich and darkly coloured. *A. adippe* was altogether absent. *Melitæa artemis* occurred sparingly at the latter end of May. *Nemobius lucina* was fairly represented, and I took some in very fair condition when down here in May. *Thecla rubi* swarmed in May in the hazels, and also at the flowers of the common bugle. I never saw this insect so abundant. The same may be said of *Thecla quercus*, among the oaks in August. These two butterflies were certainly exceptions to the general rule. *Lycana alexis* was decidedly scarce; *L. corydon* fairly common, but we only obtained one specimen of *L. adonis*, and that was in August. Of moths, *Lithosia rubricollis* was common in May, among Scotch firs, flying in the daytime, this insect being new to me in this district; and among numbers of *Euchelia jacobææ*,

which was as common as usual, my nephew captured one soot-black all over, an interesting and peculiar variety; unfortunately it is not a first-class specimen. Several larvæ of *Chærocampa porcellus* were met with.—V. R. PERKINS.

LEPIDOPTERA IN CARMARTHENSHIRE. —Information having now been received from nearly all parts of the country as to the occurrence of Lepidoptera in the year 1882, a list of those observed during that year in Carmarthenshire may not be unwelcome. The list is remarkably deficient, taking it in comparison with observations made in former years. This is in a great measure owing to the very unfavourable state of the weather during the last season, which must to a great degree have acted prejudicially to the development of insect life; but it also rendered the pursuit of the insects themselves somewhat tiresome, or, to say the least of it, less exhilarating than it usually is, for bad weather and bad success do not contribute to the charms of an entomologist's pursuits. The weather, therefore, had something to do in preventing that vigilant search which is necessary if we wish to arrive at the real entomological resources of a neighbourhood. In the list which follows, the Diurni and Nocturni, though poor, show rather better than the other groups; but the Geometræ and Noctuæ were certainly nothing like properly worked. The scarcity of the Geometrina, however, may be plainly shown by the few that fell to the net during several long marches made in pursuit of them, and this shows that though not sought after with the greatest zeal or energy, their number may be safely estimated at less than half the usual average. The few larvæ, too, of any kind which fell to the beating-stick during the season show how remarkably scarce were larvæ even of the commonest species. We must hope, however, that the development of the different species is in many cases only retarded, and that a favourable spring and summer may show as many of them again on the wing in as good numbers as formerly. I now add the list:—*Pieris rapæ* and *P. napi*, common; *Anthocharis cardamines*, in great numbers; the Argynnidæ are invariably rather scarce here, but last year *Argynnis euphrosyne* was the only one seen; *Vanessa urticæ*, plentiful; *V. io*, scarce; *Arge galatea*, one only. The following were in good numbers:—*Satyrus egeria*, *S. megæra*, *S. janira*, *S. tithonus*, *Chortobius pamphilus*, and *Polyommatus phlæas*. Of

the blues *Lycæna alexis* was the only one seen, and of the Hesperiidæ not one. Among the Sphingidæ *Acherontia atropos* and *Chærocampa elpenor* were the only representatives. About forty-five species, chiefly common everywhere, were also seen. The only insects in any abundance were the larvæ of *Eupithecia virgaureata* on the flowers of ragwort (*Senecio jacobæa*), and those of *E. minutata* on the flowers of devil's-bit scabious (*Scabiosa succisa*).—OWEN S. WILSON; Carmarthen.

EARLY BREEDING OF ENDROMIS VERSICOLOR.—I was surprised to see on the morning of February 15th a fine male *E. versicolor* in my breeding-cage, which had been exposed out of doors, and therefore in no way forced. The specimen had been two years in pupa, being from Rannoch eggs received 1881.—W. H. TUGWELL; Greenwich, Feb. 17, 1883.

ACRONYCTA STRIGOSA AT MEPAL.—The area to which *Acronycta strigosa* is confined seems so limited that those interested in the distribution of this local species may like to hear that on July 14th, 1882, I captured a female specimen in the garden of Mepal Rectory. From Skertchley's 'Fenland Past and Present' we learn that *A. strigosa* has occurred at a goodly number of places close to Cambridge, but chiefly on the eastern side, as, for instance, at Fulbourne, long considered its head-quarters. It is apparently much rarer as we get further from Cambridge, and has not yet been turned up at Ely by any of the entomologists working there. It has been taken by Mr. Fryer at Chatteris, distant only four miles from Mepal, which lies eight miles west of Ely, and possesses some historical interest from its importance as a fenland centre in earlier times. From an entomological point of view it does not seem to produce any very noteworthy species, with the exception of *A. strigosa*, unless we may reckon as such *Xanthia gilvago*, which is common enough at sugar in the autumn months.—HAROLD A. HARRIS; Mepal Rectory, Ely, Jan. 17, 1883.

YPSIPETES ELUTATA.—While out on the moors near this neighbourhood searching for larvæ of *Larentia cæsiata* and *Cidaria populata* on *Vaccinium*, I got a number of larvæ feeding on the common ling, not knowing the species at the time. I brought them home and reared them separately to see what would come out. When they appeared they were the same dark

form of this species. I now take it every year feeding on the ling, and think Mr. J. Jenner Weir was quite right in naming this species as a heath-feeder, that being the common food-plant on the mountains in the North. Lower down among the woods the larger variety swarms, and feeds on the different species of willow.—WM. REID; Bridgefoot, Pitcaple, Aberdeenshire, N.B., Feb. 6, 1883.

DESCRIPTION OF THE LARVA OF *CHILO PHRAGMITELLUS*.—When collecting at Wicken Fen in June, 1880, and again in May, 1882, I found the larvæ of this species were readily procured, by pulling at the tall, withered, previous year's reed-stems along the ditch sides; the stems tenanted by larvæ or pupæ broke off near the roots. Length just about an inch, and rather slender. Head considerably smaller than the second segment; it has the lobes rounded, and is, as is also the frontal plate, highly polished; the whole surface of the upper part of the body indeed is very smooth and glossy. Body cylindrical, but when crawling is strongly attenuated posteriorly. Segmental divisions well defined, and the tubercles distinct but not very prominent. The ground colour is a pale yellowish grey, some specimens having a pink tinge. Head wainscot-brown, the mandibles very dark sienna-brown. Frontal plate greyish yellow, edged all round with smoke-colour; the purplish brown alimentary canal forms the dorsal stripe; the subdorsal and spiracular stripes broader, also purplish brown; this darker colour is also more or less suffused on the dorsal area between the subdorsal lines, giving some specimens a darker appearance than others. Spiracles and tubercles intensely black. Ventral surface, legs, and prolegs uniformly of the pale ground colour of the dorsal area. It feeds in the reed stem, just below the surface of the ground, and frequently, probably usually, under water. The change to pupa also takes place inside the stem. This is large for the size of the moth, those which will produce female specimens being nearly an inch in length. It is long, cylindrical, narrow, and of nearly uniform width, tapering near and towards the anal point, and also towards the snout; it is smooth, highly polished, and all the parts well defined. When exposed it is very active, wriggling and twisting about rapidly and with the greatest ease. Ground colour of the abdominal segments deep ochreous yellow; wing-, eye-, leg-cases, abdominal divisions, and anal point, dark

brown. In some reed-stems I found, instead of the larva or pupa, batches of cocoons of a small but very pretty ichneumon, and in one instance the just-emerged ichneumons were inside the stem. They were brightly coloured, black and reddish brown. A number of these I forwarded to Dr. Capron, who informed me they were a species of *Apanteles*, new to Science (Entom. xiv., 142).—GEO. T. PORRITT; Huddersfield, Feb. 8, 1883.

TINEA PALLESCENTEELLA.—I took a very fine specimen of this insect in my garden in the middle of last month, being the first I have seen in this neighbourhood. Before the firm with whom I am engaged removed from 101, Fenchurch Street, which was directly opposite the dock warehouses, these moths came freely to light on mild, damp evenings, during the months of October, November and December, and I secured a large series of beautiful specimens. This is no doubt an imported species, and I believe all my specimens came from the warehouses mentioned above. It appears to be gradually extending its range, and promises to become one of our commonest insects.—WILLIAM MACHIN; 22, Argyle Road, Carlton Square, E., Feb. 14, 1883.

HYMENOPTEROUS PARASITES OF LEPIDOPTERA.—Since the publication of the last list (Entom. xiv. 138) the following bred specimens of parasitic Hymenoptera have passed through Mr. Bridgman's or my hands. As in the former lists, the species not included in Marshall's catalogue have their names printed in small capitals. Our thanks are due to many entomologists who have favoured us with their bred parasites, from the examination of which much information has already been elicited.

Ichneumon bilineatus, Gmel., from *Notodonta dodonea* (G. Elisha).

I. xanthorius, Forst., from *Dianthæcia irregularis* (Mrs. Hutchinson, G. C. Bignell).

Exophanes occupator, Gr., from *Nonagria sparganii* (W. R. Jeffrey).

Amblyteles margineguttatus, Gr., from *Noctua brunnea* (G. C. Bignell).

A. castigator, F., from *Dianthæcia carpophaga* (Elisha).

A. panzeri, Wesm., from *Agrotis exclamationis* (W. Buckler, Bignell).

Troqus lutorius, F., from *Sphinx ligustri* (G. T. Baker; G. H. Raynor).

T. (Automalus) alboguttatus, Gr., from *Orgyia pudibunda* (Bignell).

Eurylabus dirus, Wesm., from *Eriogaster lanestris* (R. M. Sotheby).

Platylabus orbitalis, Gr., from *Phibalapteryx tersata* (V. R. Perkins).

P. dimidiatus, Gr., from *Melanippe fluctuata* (Sotheby).

Ischnus nigricollis, Wesm., from *Pterophorus (Acipitilia) galactodactylus* (G. T. Porritt).

- Cryptus tricolor*, Gr., from *Simyra venosa* (W. H. Harwood, Bignell).
C. incubitor, Stroem. (? *fumipennis*, Gr.), from *Saturnia carpinii* (R. Meldola ; Elisha ; E. A. F.).
Mesostenus obnoxius, Gr., from *Zygæna filipendulæ* (M. S. Jenkyns).
Hemiteles furcatus, Tasch., from *Apanteles* cocoons ex *Zygæna filipendulæ* ; *Dianthæcia cucubali* (Bignell) ; *Gracilaria phasianipennella* (J. H. Threlfall ; J. E. Fletcher).
H. fulvipes, Gr., from various *Microgasterid* cocoons by several correspondents.
H. areator, Paus., male, from *Macrocentrus thoracicus* ex *Phycis betulella* (H. Bartlett, E. A. F.) ; *Talaporia pseudobombycella* (J. T. Carrington) ; *Gelechia vulgella* (Elisha).
H. melanarius, Gr., from *Argynnis paphia* (Bignell).
Heminachus rufocinctus, Gr., male and female, from *Zygæna filipendulæ* (W. H. Grigg, Bignell) ; *Coleophora cæspititiella* (Fletcher).
Pezomachus insidiosus, Först., from *Coleophora viminetella* (Fletcher).
P. analis, Först., male and female, from *Zygæna filipendulæ* (W. H. Grigg, Bignell).
Henicospilus ramidulus, L., from *Trachea piniperda* (F. Norgate).
Ophion luteum, L., from *Miselia oxyacanthæ* (Bignell).
ANOMALON PERSPICUUM, Wesm., from *Cleora lichenaria* (E. Atmore).
A. clandestinum, Gr., from *Eupithecia castigata* ; *Cerostoma costella* (Bignell) ; *Eupithecia absynthiata* (Raynor).
Agrypon tenuicorne, Gr., from *Selenia lunaria* (Elisha).
A. canaliculatum, Ratz., from *Steganoptycha rufimistrana* (Lord Walsingham).
A. SEPTENTRIONALE, Holmgr., from ? *Pecilocampa populi* (Raynor).
Trichomma enecator, Rossi, from *Tortrix* larva on *Myrica gale* (Walsingham).
Paniscus cephalotes, Holmgr., from *Dicranura vinula* (E. W. Andrews ; Sotheby) ; *D. bifida* (Baker).
P. virgatus, Fourc., from *Odontopera bidentata* ; *Cosmia trapezina* ; *Halias prasinana* (Bignell).
P. testaceus, Gr., from *Eupithecia castigata* (Bignell).
P. TARSATUS, Brischke, from *Eupithecia castigata* ; *E. absynthiata* ; *E. virgaureata* (Bignell).
Campoplex mixtus, Gr., from *Biston hirtaria* ; *Amphydasis prodromaria* ; *Pygæra bucephala* (Bignell) ; *Fidonia piniaria* (E. A. F., cocoon from G. H. Raynor).
C. falcator, Zett., from *Notodonta ziczac* (Bignell).
C. oxyacanthæ, Boie, from *Himera pennaria* (Bignell).
C. pugillator, L., from *Amphydasis betularia* ; *Tæniocampa populeti* (Bignell).
C. pugillator, L., var. ? from *Thecla betulæ* (T. Eedle) ; *Cymatophora ridens* (Bignell).

- C. ebeninus*, Gr., from *Orgyia fascelina* (Harwood, Bignell).
C. ? n.s., from *Tortrix forsterana* (Elisha).
Sagaritis declinator, Gr., from *Limacodes asellus* (Bignell).
S. n.s., from *Tæniocampa stabilis* (Bignell).
Limneria bicingulata, Gr., from *Hybernia progemmaria* (Bignell).
L. BRISCHKEI, Brdg., from *Noctua triangulum* (Bignell).
L. CARBONARIA, Brischke, from *Amphidasis prodromaria* (Bignell);
Boarmia roboraria (Bignell, larva from J. Hellins).
L. crassiuscula, Gr., from *Dicranura vinula* (Bignell).
L. CURSITANS, Holmgr., from *Vanessa atalanta* (H. M. Golding-Bird—Mrs. Norgate, Bignell).
L. ensator, Gr., from *Yponomeuta plumbella*; *Coleophora onosmella* (Elisha).
L. erucator, Holmgr., from *Hybernia progemmaria* (Bignell); *Spilonota neglectana*; *Gelechia obsoletella* (Elisha).
L. faunus, Gr., from *Plutella porrectella* (Elisha).
L. femoralis, Gr., from *Coleophora conspicuella* (Elisha).
L. flexicauda, Holmgr., from *Peronea hastiana* (Perkins).
L. geniculata, Gr., from *Phycis betulella* (Bartlett, E. A. F.).
L. INTERRUPTA, Holmgr., from *Arctia fuliginosa* (Raynor); *Tortrix rosana*; *Dictyopteryx bergmanniana*; *Laverna fulvescens*; *Gelechia hippophæella* (Elisha).
L. KRIECHBAUMERI, Brdg., from *Tæniocampa stabilis* (Bignell).
L. LUGUBRINA, Holmgr., from *Gelechia brizella* (Sang).
L. læsta, Gr., from *Hybernia defoliaria* (Bignell).
L. multicincta, Gr., from *Alucitina polydactyla* (E. A. F.).
L. mutabilis, Holmgr., from *Tortrix rosana*; *Ephippiphora fæneana*; *Grapholitha paykulliana* (Elisha); *Tortrix* larva on *Lithospermum* (Raynor).
L. nana, Gr., from *Laverna fulvescens* (Fletcher).
L. RUFA, Brdg., from *Bombyx quercus* (Bignell).
L. ruficincta, Gr., from *Diantheecia cucubali*; *Hecatera serena*; *Anarta myrtili* (Bignell); *Ellopiæ fasciaria* (Mrs. Hutchinson, Bignell); *Pterophorus (Mimæoptilus) plagiodactylus* (C. G. Barrett).
L. rufipes, Gr., from *Gelechia hippophæella*; *Laverna fulvescens* (Elisha).
L. tibialis, Gr., from *Coleophora albitarsella* (Elisha).
L. unicincta, Gr., from *Vanessa urticæ*; *Orgyia pudibunda*; *Limacodes asellus*; *Odontopera bidentata*; *Eupithecia rectangulata* (Bignell); *Acronycta psi* (Fletcher); *Pterophorus (Aciptilia) galactodactylus* (Porritt).
L. VESTIGIALIS, Ratz., from *Depressaria assimilella* (Atmore).
L. viennensis, Gr., ? from *Gracilaria stigmatella* (Threlfall).
L. VULGARIS, Tschek., from *Gonepteryx rhamni* (Bignell).
L. n. s., ? from *Cucullia asteris* (Jeffrey).

- L. n. s.*, ? from *Eupithecia rectangulata* (Bignell).
Cremastus albipennis, Zett., ? from *Coceyx strobilana* (Fletcher).
Mesochorus confusus, Holmgr., var. ?, from *Xylopoda fabriciana* (Bignell).
M. pictilis, Holmgr., from *Iodis lactearia* (Bignell).
M. anomalus, Holmgr., from *Nola cucullatella* (A. S. Olliff); *Apanteles difficilis* on *Euchelia jacobæ* (Bignell).
M. olerum, Curt., from *Coleophora* sp. ?, on *Galium verum* (Raynor).
M. GRACILENTUS, Brischke, from *Limneria vulgaris* ex *Gonepteryx rhamni* (Jenkyns).
M. FORMOSUS, Brdg., from Braconid cocoons (Porritt); *Macrocentrus collaris* ex *Noctua triangulum*; *Apanteles* cocoons ex *Xylina rhizolitha* (Bignell).
M. FUSCICORNIS, Brischke, from *Apanteles* cocoons ex *Abraaxa grossulariata*; *Apanteles nothus* ex *Melanippe galiata* (Bignell).
M. GIBBULUS, Holmgr., from *Limneria lugubrina* ex *Hypera variabilis* (E. A. Butler).
Exetastes illusor, Gr., from *Arctia caja* ? (E. A. F.).
Exochus mansuetor, Gr., from Tortrix pupa on sallow (E. A. F.).
E. congener, Holmgr., from *Nola cicatricalis*, Tr. (Baker); pupa from Hungary.
E. tibialis, Holmgr., var., from *Stigmonota rufimitrana* (Walsingham).
Chorinaus talpa, Hal., from *Gracilaria semifascia* (Elisha).
Metopius micratorius, F., from *Bombyx callunæ* (Mrs. Norgate).
Pimpla instigator, F., from *Zygana filipendulæ* (Olliff); *Liparis chrysorrhæa* (J. J. Weir); *L. auriflua*; *Arctia caja*; *Pygæa bucephala*; *Gonoptera libatrix* (E. A. F.); *Lithosia quadra* (Eedle); *Ennomos tiliaria* (Harwood, Bignell).
P. flavonotata, Holmgr., from *Vanessa c-album*; *Ennomos tiliaria* (Bignell).
P. brevicornis, Gr., from *Dianthæcia cucubali* (Bignell); *Tortrix forsterana*; *Sericoris euphorbiana* (Elisha).
P. nœum, Ratz., from *Tortrix sorbiana*; *Ephippiphora fœneana*; *Eupæcilia ciliana* (Elisha); *Lithocolletis* on birch (Fletcher).
Glypta hæsitator, Gr., from *Tortrix* on *Myrica gale* (Walsingham).
G. scalaris, Gr., from *Endopisa nigricana* (Fletcher).
G. bifoveolata, Gr., from *Ephippiphora fœneana* (Elisha).
Lissonota decimator, Gr., from *Gortyna flavago* (Norgate).
L. segmentator, F., male ?, from *Scardia cloacella* (Fletcher).
L. FLETCHERI, Brdg., from *Gelechia lentiginosella* (Fletcher).
Phytodietus segmentator, Gr., from *Tortrix viridana* (Bignell); *Phoxopteryx mitterbacheriana* (Fletcher).
P. scabriculus, Gr., from *Endopisa leplastriana* (Elisha); *Tortrix* on *Myrica gale* (Walsingham); galls of *Andricus terminalis* (Fletcher).
Bracon satanas, Wesm., from *Eupæcilia ciliana* (Elisha).

- B. sp.?*, from *Alucitina polydactyla* (E. A. F.).
Clinocentrus exsertor, Ns., from *Spilonota neglectana* (Elisha).
Rhogas bicolor, Spin., var., from *Zygæna filipendulæ* (Jenkyns).
R. circumscriptus, Ns., from ? *Odonestis potatoaria* (Bignell; Butler; E. A. F.; Sotheby; A. H. Swinton); *Melanippe galiata* (Bignell); *Tæniocampa stabilis* (Bignell).
Colastes braconius, Hal., from *Tischeria dodonæa* (Fletcher); *Phytomyza nigricans* in *Symphoricarpos* leaf (P. Inehbald).
Ascogaster rufipes, Latr., from *Endopisa leplastriana*; *Coleophora gryphipennella* (Elisha).
A. consobrinus, Curt., from *Chelonia caja* (E. A. F.); *Gelechia vulgella* (Elisha).
Apanteles albipennis, Ns., from *Eupæcilia ciliana*; *Gelechia tricolorella*; *Gracillaria semifascia* (Elisha).
A. glomeratus, L., from *Pieris brassicæ*; *P. rapæ* (Bignell).
A. juniperatæ, Bé., from *Bombyx rubi* (Meldola); *Odontopera bidentata*; *Crocallis elinguaris*; *Amphidasis betularia* (Bignell); *Melanippe galiata* (Sotheby).
A. difficilis, Ns., from *Phigalia pilosaria* (Sotheby, Butler); *Eupithecia valerianata* (*vininata*) (Raynor); *Pterophorus* (*Mimæsoptilus*) *plagiodyctylus* (Carrington).
A. ruficrus, Hal., from *Plusia gamma* (Fletcher).
A. rubripes, Hal., from *Geometra papilionaria* (Raynor); *Iodis lactearia* (Bignell).
A. BREVICORNIS, Wesm. (? = *placidus*, Hal.), from *Tethea retusa* (Bignell).
A. SPURIUS, Wesm., from *Euchelia jacobææ* (Sotheby).
A. PUNCTIGER, Wesm., from *Eupæcilia ciliana*; *Gracillaria semifascia* (Elisha).
A. n.?s. (near *falcatus*, Ns.), from *Pterophorus* (*Leioptilus*) *microdactylus* (Elisha).
Microplitis dorsalis, Spin., from *Cerastis spadicea* (Bignell).
Orgilus obscurator, Ns., from *Coleophora alcyonipennella* (Elisha).
Therophilus cingulipes, Ns., from *Parasia carlinella* (Elisha); *Coleophora troglodytella* (Fletcher).
T. rufipes, Ns., from *Coleophora gryphipennella* (Elisha).
Perilitus cinctellus, Ns., from *Xylophasia scolopacina* (Eedle).
P. unicolor, Wesm., from *Tæniocampa cruda* (Sotheby, Butler).
HOMOLOBUS DISCOLOR, Wesm., from *Cabera pusaria* (Bignell).
Macrocentrus linearis, Ns., from *Platypteryx falcu* (Bignell); *Ebulea crocealis*; *Cerostoma xylostella* (Elisha).
M. linearis, var. *pallipes*, Ns., from *Eunychia octomaculalis* (Jeffrey); *Gelechia mouffetella* (Elisha).
M. thoracicus, Ns., from *Phycis betulella* (E. A. F., cocoons from H. Bartlett).

M. collaris, Spin., from *Noctua triangulum* (Bignell).

Eulophus ramicornis, Geof., from *Clostera curtula* (Raynor).

Eulophus sp.? from *Tæniocampa stabilis* (Bignell).

E. sp.? from *Dianthæcia cucubali* (Bignell).

Pteromalus puparum, Swed., from *Pieris rapæ*; *Vanessa c-album* (Bignell);
Vanessa urticæ (Sotheby).

Copidosoma chalconotum, Dalm., from *Depressaria heracliana* (Hellins, Bignell).

—EDWARD A. FITCH; Maldon, Essex, February, 1883.

NOTE ON *LIMNERIA RUFA*, Brdg., *L. BRISCHKEI*, Brdg., AND *RHOOGAS RETICULATOR*, Nees. — The season having arrived for obtaining *L. rufa* and the two following Ichneumons, a few remarks on their economy may be interesting to some of the readers of 'The Entomologist.' To obtain *Limneria rufa*, which is a new species bred by the writer last year, it is necessary to obtain the larva of *Bombyx quercus* this month (March); for this reason, the ichneumon larva leaves its victim before it moults for the fourth time. When it does leave it, it forms an oval, black, rough cocoon under the unfortunate caterpillar on the inside of which it had been feeding. The writer obtained the first infested larva when at Torquay on the 14th March, and bred the parasite on the 5th April, 1882. *Limneria brischkei*, Brdg., is also a new species, bred last year. The parasitic larva came out of a small larva (about one-third grown) of *Noctua triangulum*, which was obtained during the first week in March at Penzance. After leaving its victim it formed a long oval, dirty white, rough cocoon, without zones; the empty skin of the *Noctua* larva remained attached to its side; the imago appeared on the 5th April. *Rhogas reticulator*, Nees, infests the larva of *Odonestis potatoria* before the fourth moult, and emerges in its imago state from its victim. The infested larva remains on its food-plant, and has the appearance of preparing to moult, but it gradually shrinks and appears to dry up; the imago ultimately making its appearance through the back of the wretched caterpillar.—G. C. BIGNELL; Stonehouse, Plymouth, February 20, 1883.

PARASITE ON THE LARVA OF *ACRONYCTA PSI*.—On August 24th, 1882, whilst walking under some lime trees, I picked up the larva of an *Acronycta psi*. On examining it the next day I found two chocolate-brown coloured eggs on its left side, between its head and the horn, which this caterpillar has on its back; both

eggs were visible to the naked eye, but one was larger than the other. On the 26th the larger egg had enlarged, and a portion of it was white. 28th. Still more enlarged. 29th. More enlarged; it now looked like an elongated bladder with a kind of footstalk, which was firmly attached to the caterpillar under the bladder-like looking object; a portion of the dark egg was still to be seen between it and the beginning of the footstalk; the bladder-like object or grub was in segments, was transparent white, with white tree-like opaque markings, and there was something dark forming inside it. 30th. Still larger. 31st. Larger; it was by this time a quarter of an inch long, and formed an arch over the caterpillar's neck. For several days past the poor caterpillar had tried in vain to rub off this unwelcome guest, but all its efforts were in vain. September 1st. Larger; the caterpillar had by this time become very torpid, and had lost its beautiful colouring. 2nd. Larger, and nearly opaque white; and by three o'clock, p.m., it had come off, and was half an inch long; the grub had no legs, but used the posterior part of its body to move itself about with, but it did not do much more than tumble about incessantly; by this time the caterpillar was dead. 3rd. The released grub was still larger, but not so lively; and on the 6th had changed from cream-colour to bright yellow. October 12th it began to darken, and on the succeeding day was chocolate-brown, had shrivelled up to half its former size, and appeared dead. It had evidently died in the act of spinning its cocoon, or in changing into pupation. On two occasions I submitted the larva, with its unwelcome guest on it, to the inspection of the best practical entomologist we have in this town, and he said he had never seen anything of the kind before on a caterpillar, although he had had thousands of lepidopterous larvæ under his care. I enclose the smaller egg; the piece of skin which came off the *Acronycta* caterpillar, and which had, when on, the appearance of a footstalk; also the grub in its changing state, when it died; and shall be obliged for any information on the subject.—CLARA KINGSFORD; Barton House, Canterbury, January 6, 1883.

[The objects sent were quite unrecognisable when received by me. There can be little doubt, however, but that the external parasite alluded to is *Paniscus cephalotes*, Holmgren,—one of the Ophionidæ (ichneumons), whose interesting economy has been so lately referred to in these pages by Mr. E. W. Andrews (Entom.

xv. 163). Herr Brischke has bred this species from *Acronycta psi*, *A. tridens*, and *A. megacephala*, amongst others. The curious pedunculated egg and economy of the young *Paniscus* larva is alluded to in Westwood's "Introduction" (vol. ii., pp. 145, 146), and Hartig's figures copied (fig. 76, 9-14); see also Brischke and Adler in the 'Entomologische Nachrichten' (v. 221, 265).—E. A. F.]

NOTE ON NYCTEMERA ANNULATA (CORRECTION).—I find that the fly mentioned in my last note on *Nyctemera annulata* (Entom. xvi. 39) is not *Chlorogaster ruficeps*, but a new species which has been recently described in the 'Transactions of the New Zealand Institute' by me under the provisional name of *Nemoræa nyctemerianus*. I regret that this error should have taken place.—GEO. VERNON HUDSON; Karori, Wellington.

THE YORKSHIRE LIST OF LEPIDOPTERA. — Entomologists generally, and particularly those of the North of England, will be pleased to know that the Catalogue of Yorkshire Lepidoptera, on which Mr. Geo. T. Porritt, F.L.S., of Huddersfield, has for the last few years been engaged, is now complete. The manuscript has been placed in the printer's hands by the Secretaries of the Yorkshire Naturalists' Union, in whose 'Transactions' the list will be published. Mr. Porritt has received the assistance of the leading lepidopterists of Yorkshire. In the list are included about two-thirds of the species occurring in the British Isles.—W. D. ROEBUCK; Sunny Bank, Leeds,

OBITUARY.

BENJAMIN COOKE, who was for several years President of the Northern Entomological Society, and later Vice-President of the Lancashire and Cheshire Entomological Society, died suddenly at his residence in Southport on Sunday, the 4th of February, 1883, at the age of 66 years. Benjamin Cooke was unquestionably the best all-round entomologist Lancashire has produced for many years; but being so timid by nature and so retiring in his habits he was little known beyond his immediate circle of friends. His extreme caution and fear of making a mistake, added to the desire to be quite sure of the completeness of his observations,

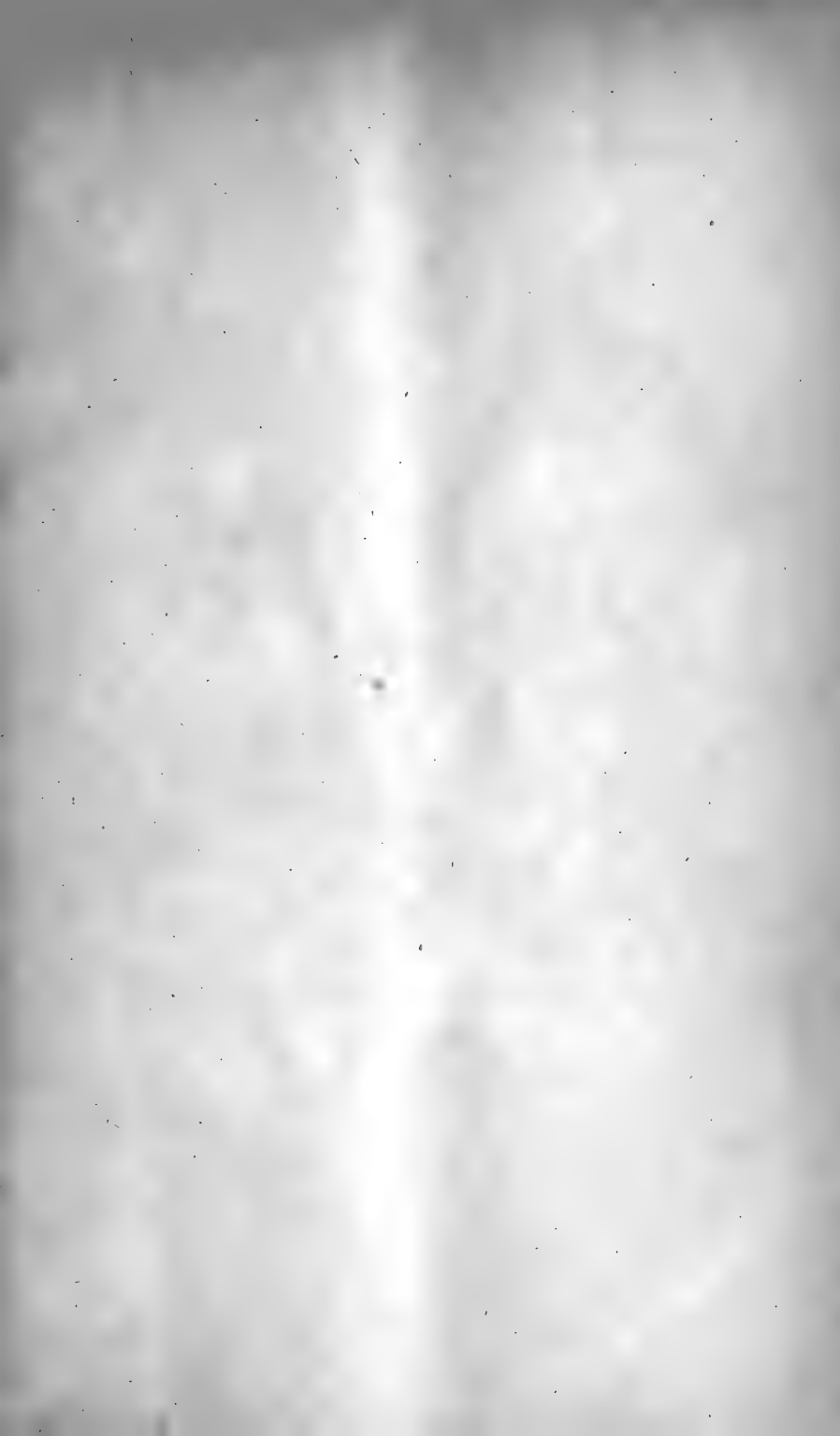
led him to defer publishing his knowledge from year to year until now, unfortunately, his great experience and ripe knowledge has passed away with him ; thus his assiduous labours have borne but little fruit to be enjoyed by coming generations of students in his favourite subjects. It was, however, in the field that he was the most enjoyable companion, his never tiring recital of his varied entomological observations rendering lively many a blank collecting day.

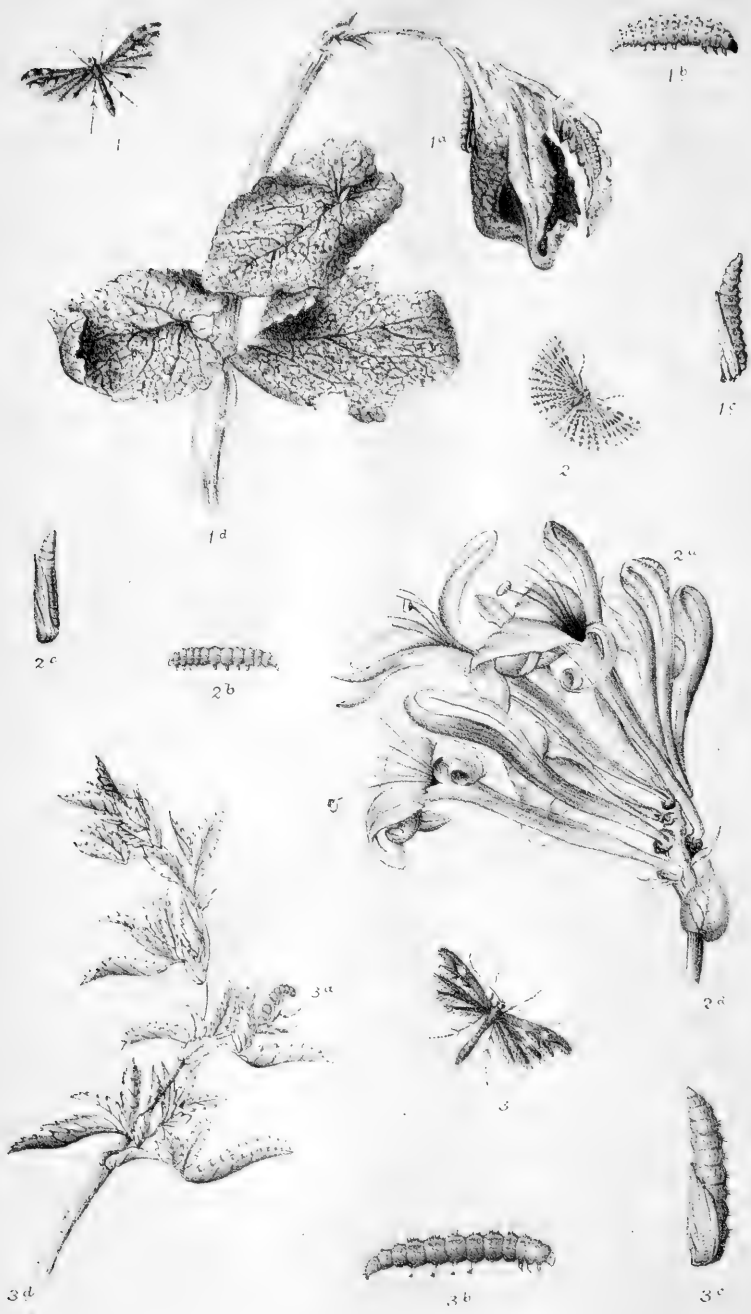
Probably the work by which he was best known was a paper read at a meeting of the Northern Entomological Society, December 26th, 1857, upon the classification of insects, which at the time caused some sensation, and which may be found printed in 'The Zoologist,' vol. xvi., p. 5951 ; and it is only three months ago since he read another paper on the same subject before the Entomological Society of Lancashire and Cheshire. In this latter paper he acknowledges certain modifications, but in principle he still adhered to his system published a quarter of a century ago. The last sentence of his last paper is so characteristic of the man that we give it, verbatim, for the benefit of our readers :—"I have carried out the details in the arrangement of my own collection chiefly in the orders Hymenoptera, Diptera, and Hemiptera, but these details will require a thorough revision, and this cannot be done properly without assistance." Latterly he had published in the Proceedings of the same Society a Catalogue of the Hymenoptera and Diptera of Lancashire and Cheshire.

The first of the numerous additions to the British fauna made by the late Mr. Cooke was *Nyssia zonaria*, now upwards of forty years ago.

Benjamin Cooke, brother of our correspondent Mr. Nicholas Cooke, was son of the late Isaac Cooke, founder of one of the large and well-known firms of cotton brokers in Liverpool, the former being born 16th September, 1816.

I am indebted for the material of this obituary notice to my friends Messrs. S. J. Capper and C. S. Gregson, of Liverpool.—
[J. T. C.]





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CONTRIBUTIONS TO THE HISTORY OF THE BRITISH *PTEROPHORI*.

BY RICHARD SOUTH.

(Continued from p. 29.)

OXYPTILUS, Zell.
teucrui, Greening.

(PLATE II., FIG. 1.)

IMAGO.—Expanse, 9–10 lines. Fore wing dark brown, a few scattered whitish scales along the costa; midway between digital juncture and base of wing is an indistinct blackish spot; two slender white bands run through both digits, but these are only distinctly formed and conspicuous on the outer digit; the costa is margined with white from the posterior edge of second band to the tip of digit. Fringes brown; the apical fringes of outer digit are variegated with black and white; at the tip and angle of inner digit are small tufts of black scales, and between these tufts a nearly round patch of pure white; the fringes on the middle of inner margin of this digit are also white, with three small equidistant patches of black scales. Tip of outer digit acute, that of the inner subacute. Hind wing, shafts of feathers dark brown, fringes grey-brown; third feather shorter, with a large patch of black and dark brown cilia towards the tip; this is followed by a few whitish cilia, and at the extreme tip is a small round black spot; there are also some whitish scales in the fringes between the brown patch and base of feather. Head and thorax colour of fore wing; abdominal juncture whitish. Abdomen and legs dark brown, variegated with white. July.

LARVA.—Length, 6 lines, attenuated posteriorly. Head smaller than 2nd segment, yellowish green; the crown and sides mottled with dark violet-brown, and the mandibles pale reddish brown. Ground colour green, or yellowish with green tinge; a slender faint pink dorsal line, and broader paler rosy subdorsal line. Tubercles, two dorsal rows of brownish

warts (two on each segment), each emitting a star-like ray of short white bristles, and one moderately long hair also white, but having its basal half chequered with brownish; subdorsal and spiracular rows similar to the dorsal series, but rather smaller. Spiracles enclosed in a dark violet-brown ring. Prolegs and anal claspers yellowish green, mottled with dark violet-brown. Food, wood-sage (*Teucrium scorodonia*). May and June.

PUPA.—Dull green, head and wing-cases paler; there are two dorsal rows of warts with chequered hairs, as in the larval stage. On the under side of a withered leaf, clod, or stone, attached by the anal segment. June.

Plate II., fig. 1, *Oxyptilus teucii*; 1 a, larva; 1 b, ditto, enlarged; 1 c, pupa, enlarged; 1 d, food-plant, wood-sage or wild germander (*Teucrium scorodonia*).

This is a local species, but where met with is generally to be obtained in some numbers in the perfect state. The insect does not take long flights. Towards the end of last July I netted a large number in a fir plantation as they were darting about among a large patch of *Teucrium* in the sunshine. As the majority were considerably wasted, I was obliged to adopt the expedient of boxing all I saw, until each of my available boxes contained *Teucii*, and then sit down and examine the condition of my captures, releasing all those not up to cabinet standard. Had the worn specimens been set at liberty as captured I should possibly have retaken them several times, so restricted was the area of their flight.

The larva gnaws a hole in the upper portion of a main shoot (*vide* plate, fig. 1 d), causing the top to droop. It may be found by carefully searching these drooping plants, or others, in the immediate vicinity.

Mr. Carrington and I found a few larvæ last June feeding on stunted plants of wood-sage, growing on a dry embankment in Tilgate Forest; but as I had the misfortune to lose the tin in which they were placed, Mr. Howard Vaughan was kind enough to send me a supply, from which the drawing and description were taken.

ALUCITA, Zell.

hexadactyla, Linn.

polydactyla, Hb.

(PLATE II., FIG. 2.)

IMAGO.—Expanse, 6–7 lines. Fore wing divided into six distinct plumes or digits; one or two of the divisions extend nearly to the base of

the wing; the shafts are pale ochreous-brown, or bone-colour; along the costa are six blackish quadrate spots; the fourth costal spot is the commencement of a blackish band, which extends across all the digits to the inner margin; a similar band runs from the sixth costal spot. Fringes pale ochreous-brown. Hind wing divided nearly to its base into six plumes, shafts and fringes pale ochreous-brown, variegated with blackish. July to April.

LARVA.—Length, 4 lines; somewhat leech-like, both extremities pointed; anterior segments retractile. Head smaller than 2nd segment, pale pinkish brown, spotted with darker brown; mandibles dark brown. Ground colour reddish pink, or salmon-colour, becoming paler when nearly full-fed, and finally, just before pupation, yellowish white. No warts; but there are a few short bristles scattered over the body. Food, honeysuckle (*Lonicera periclymenum*); feeds in the flowers in June.

Plate II., fig. 2, *Alucita hexadactyla*; 2 a, larva; 2 b, ditto, enlarged; 2 c, pupa, enlarged; 2 d, food-plant, honeysuckle (*Lonicera periclymenum*).

I take this opportunity of thanking Mr. Fitch for kindly sending me the larva of this species to describe. The imago is of frequent occurrence wherever there is honeysuckle, and hibernated specimens are often to be observed in outhouses in the country where that plant is near. If larvæ are desired, the flowers should be shaken over a sheet of paper, when the larvæ will, if present, be shaken from their retreat. Honeysuckle growing round the hollow stem of a tree, or over a portico, is a favourite nursery of *Alucita hexadactyla* larva.

MIMÆSEOPTILUS, Wallgr.

phæodactylus, Hb.

lunædactylus, Haw.

(PLATE II., FIG. 3.)

IMAGO.—Expanse, 9–10 lines. Fore wing brown, rather glossy, darker along the costa from the middle to the tip of outer digit; a pale curved blotch extends from costa to inner margin, the inner edge of which touches the digital juncture. Fringes glossy brown, darker round the anterior edge of inner digit. Tip of outer digit subacute, that of inner obtuse. Hind wing glossy brown, fringes slightly darker. Head, thorax and body brown; abdominal junction paler. Legs shining brown. July and August.

LARVA.—Length, 7 lines; moderately stout, tapering towards anal extremity. Head smaller than 2nd segment, whitish, tinged with green;

crown, sides and spot on each cheek shining black; mandibles blackish brown. Ground colour green, segmental divisions paler, dorsal line bluish green. Tubercles, four dorsal rows (four on each segment) black, each with a moderately long grey hair, and tuft of shorter whitish bristles; the inner rows of warts are situate towards the anterior, and those forming the outer rows towards the posterior edges of segments; subdorsal, a black wart on each segment, with a moderately long grey hair, and tuft of short white bristles; spiracular, two small black contiguous warts on each segment, emitting whitish hairs. Prolegs and claspers semitransparent, dotted with grey. Food, rest-harrow (*Ononis*); feeds on the terminal leaves. June.

PUPA.—Very like the larva; attached by the tail to the surface of a leaf of food-plant, generally on one of the terminal leaves. June and July.

Plate II., fig. 3, *Mimæseoptilus phæodactylus*; 3 *a*, larva; 3 *b*, ditto, enlarged; 3 *c*, pupa, enlarged; 3 *d*, food-plant (*Ononis arvensis*).

I have not met with this insect in any stage off the chalk. In North Devonshire, where *Ononis* grows in many places most luxuriantly, I did not see *M. phæodactylus*. I have also frequently examined patches of *Ononis spinosa* in various localities in Middlesex, but never observed the insect under consideration. Searching for the larva of this species is not easy work. The only way I could succeed in finding it was by kneeling down, and so bringing the eyes as close as possible to the plant. I may mention here that many leaf-feeding "plume" larvæ are in coloration and ornamentation exceedingly like the leaves on which they are found feeding or at rest. The larva of *M. phæodactylus* is especially difficult to see on this account, and until the eye becomes, as it were, trained to the task, it will fail to readily detect the object of its quest. It may be that my vision is not of the keenest, but I have certainly searched for and found many other "plume" larvæ with greater facility. The foregoing remarks apply only to searching, for where *Ononis* is in a situation favourable to beating, larvæ may be obtained without any of the unpleasant fatigue associated with searching. One season, at Ventnor, I got quite a hundred larvæ of *M. phæodactylus* by beating a long strip of the food-plant growing on an overhanging bank by a road-side.

Mr. Farn kindly told me of a locality in Kent where he had observed *Mimæseoptilus phæodactylus* flying; so as I wanted larvæ for figuring I went down there last June, in company with Mr.

Carrington, and found enough for my purpose ; but as the plant did not, from the nature of the surroundings, admit of either sweeping or beating, I had recourse to searching.

12, Abbey Gardens, St. John's Wood, London, N.W.

(To be continued.)

NATURAL LOCALITIES OF BRITISH COLEOPTERA.

BY REV. W. W. FOWLER, M.A., F.L.S.

NO. XIII.—MOORS AND MOUNTAINS.—PARASITIC BEETLES.

COLLECTING on mountains and moorland is mostly confined to stone-turning and examining moss ; a great number of species are found in these localities that do not occur elsewhere. Some of the mountain beetles are evidently varying forms of common species, as, for example, *Calathus nubigena* of *C. melanocephalus*, *Pterostichus æthiops* of *P. madidus*, and perhaps, though many might dispute this, *Leistus montanus* of *L. spinibarbis*. There are, however, many distinct forms that will occur to everyone, as *Carabus glabratus*, *Calathus micropterus*, *Elaphrus Lapponicus*, and others ; good species of *Oxypoda* and *Homalota* and other Staphylinidæ may be found in moss on the summits of hills and mountains. Mr. Champion took several good species in this way on the top of Snowdon. I once took *Philonthus lucens* under a stone on the summit of the Worcestershire Beacon, the highest of the Malvern Hills, and the only specimen of *Eudectus Whitei* known was taken by Dr. Sharp on the summit of Ben-a-bhuird, Braemar. The herbage in hollows on the sides of mountains will produce a good many species, and while mentioning this we must not forget to notice the beautiful *Chrysomela cerealis*, which may be found in numbers when the sun is shining on the wild thyme growing on the slopes of the higher parts of Snowdon.

Small tarns and pools on mountains should always be examined for water beetles—*Agabus solieri*, *A. arcticus*, *A. congener*, *Dytiscus Lapponicus*, &c.

Although the Scotch moors and mountains are usually considered to produce better species than the English, yet English moorland is by no means to be despised. Mr. Blatch, by his captures on Cannock Chase, in the heart of the Midlands, has

proved that this is the case. Among his other captures *Amara patricia*, *Cymindis vaporariorum*, *Miscodera arctica* (in abundance), *Oxytelus fulvipes*, *Gymnusa variegata*, and *Cryptocephalus punctiger*, *C. coryli*, and *C. fulcratus* are noticeable; the most curious discovery in this locality was the maritime *Nebria livida*, first found on Cannock Chase by Mr. Harris.

Scotch collecting, however, is always looked forward to by both coleopterists and lepidopterists as sure to reward them with an abundance of good species, and they are not far wrong as a general rule; there are numbers of species that are pre-eminently Scotch. Among these *Zeugophora Turneri*, *Zilora ferruginea*, *Harpalus 4-punctatus*, *Amara Quenseli*, *Dendrophagus crenatus*, *Athous undulatus*, *Strangalia aurulenta* and several other of the best of the Longicorns, will at once occur to every collector; the rare *Cryptocephalus 10-punctatus* was only found at Rannoch until Mr. Harris found it in company with *Magdalinus carbonarius* and other good beetles at Chartley Moss, another locality in the heart of the Midlands which is quite as productive as Cannock Chase, and which seems quite peculiar both as regards its fauna and its flora.

We have not, however, time to discuss separate localities; these papers have already extended themselves to a greater length than was at first intended, and it is time that they were brought to a conclusion.

There is, however, one point that requires special mention, and that is the subject of parasitic beetles. Some beetles, as *Sitaris muralis* and *Melœ*, are parasitic on bees, others, as *Metæcus paradoxus*, on wasps; the transformations of some of these insects are most wonderful, and well worthy of the attention of every student of Entomology. *Bathyscia wollastoni*, *Cryptophagus setulosus*, and the larvæ of *Antherophagus pallens* have been found in or about the nests of different species of bees. *Leptinus testaceus* has been taken in numbers at the mouth of a humble bee's nest, and *Cryptophagus populi* in or about the nests of *Colletes Daviesiana*; some of these last-mentioned cases seem to be instances of partial parasitism, the bees tolerating the intruders probably because they act as scavengers. The very rare *Velleius dilatatus* has been taken in wasps' nests, but it was in all probability not an inhabitant, but a plundering intruder. This scarce beetle seems to be attached to the burrows of *Cossus*

ligniperda; these burrows usually contain a goodly number of parasites, if they can be strictly so called, attracted apparently by the scent and high flavour of the *Cossus* larva; among them may be mentioned *Euryusa laticollis*, *Cryptarcha strigata* and *imperialis*, *Epuraea decem-guttata*, and two or three species of *Homalota*.

Some beetles, as has before been said, are parasitic upon others, as *Colydium elongatum* and *Oxylæmus cylindricus* on *Platypus cylindrus*, and *Teretrius picipes* on *Ptilinus pectinicornis*; this sort of parasitism probably occurs in more cases than we know of, and is worthy of more attention from coleopterists than it generally receives.

Of all forms of parasitic beetles, however, those that inhabit ants' nests are the most interesting; the true ant's-nest beetles all belong to the Clavicorn group, and are very likely the scavengers of the nest; some of them probably give forth odours or secretions that please the ants, like the Aphides; it has been suggested that some species, like *Batrisus venustus*, are kept by the ants as pets, but this seems hardly likely; whatever their use may be the ants take the greatest care of them, and, if the nest is disturbed, may often be seen carrying beetles much larger than themselves into places of security; they do not, however, apparently always act with the gratitude one might expect from them, as a *Myrmedonia* has been known to devour ants with which it has been shut up; it is, however, quite possible that the beetle was put in with strangers, or that its altered circumstances induced it to behave in so barbarous a fashion.

The ant's-nest beetles were first really brought under the notice of British collectors by the excellent paper of Mr. E. W. Janson in the 'Entomologist's Annual' for 1857, and full directions are there given for working them.

Around the larger ants' nests (such as those of *Formica rufa*) stones and logs of wood should be carefully laid, and from time to time these should be taken off and closely examined; many good species will be found attached to them. A great number of ants make their nests under stones, and raise no heap, or none worth mentioning: when these stones are lifted they should be put in a cloth or in a bag and left, while the collector at once without delay examines the runs, for if he stops to examine the stone first, the ants will have carried all the beetles out of sight; if this plan be adopted with the flints in the chalky districts near

Mickleham the collector will probably be rewarded by finding *Claviger foveolatus* in the nests of *Formica flava*. *Heterius sesquicornis* may be taken in the same way, in the neighbourhood of London, in nests of *Formica fusca*; it has also occurred with *F. flava* and *F. sanguinea*. Certain ants, as *Formica fuliginosa*, frequent hollow trees, especially oaks; the moist frass at the entrance should be thrown on a piece of white paper and carefully examined; the bark also near the entrance may produce *Amphotis marginata*, and the crevices of the tree near the nest several other species.

Mr. Janson, in his paper, gives a list of thirty-six species that are attached to ants' nests in this country; of these beetles some few are attached to two species of ants, but we may say roughly that five belong to *Formica flava*, eight to *F. fuliginosa*, six to *F. fusca*, eighteen to *F. rufa*, and four to *Myrmica rubra*. The genera represented are *Trichonyx*, *Claviger*, *Myrmedonia* (nine species), *Homalota* (the little section consisting of *H. flavipes*, *H. confusa*, and *H. anceps*), *Oxypoda*, *Aleochara*, *Thiasophila*, *Homœusa*, *Dinarda*, *Lomechusa*, *Atemeles*, *Leptacinus*, *Staphylinus*, *Quedius*, *Heterius*, *Dendrophilus*, *Saprinus* (*Myrmetes*), *Amphotis*, and *Monotoma*, and larvæ of *Cetonia aurata* and *Clythra 4-punctata*: two or three of the species mentioned seem to be occasional visitants rather than true ant's-nest beetles.

Many additions have been made to this list since the time at which it was published; among them are several Trichopterygidæ, as *Ptenidium formicetorum*, *Ptenidium Kraatzii*, and *Ptilium myrmecophilum*, and also *Scydmaenus Godarti*, *Batrissus venustus*, *Myrmedonia plicata*, &c. Dr. Power, by packing moss into the entrance of nests of *Formica fuliginosa* and leaving it for awhile, and then taking it out and shaking it over paper, and at the same time carefully examining the runs, found several good species, notably the very rare *Ilyobates glabriventris* and *Microglossa gentilis*; by the same method he also found *Homœusa acuminata*, *Corticaria serrata* in abundance, and *Atomaria fimetarii*. Certain Hemiptera, as *Piezostethus formicetorum*, also live in ants' nests, as well as a few insects of other orders.

The nests should not ruthlessly be pulled to pieces; at the same time if the locality is not near enough for a collector to visit it more than once or twice in the course of a season, it is a good plan to secure a large bag or two of refuse from the centre

of the nest, and examine it carefully at home; in fact, some of the minuter species cannot be easily found except by this method.

In conclusion, there are one or two localities that have produced many species in other countries, but as yet, perhaps from the fact that they have not been worked, have not had a single species recorded from them as British; the chief of these are the bone-caves, from which a great number of new species have been taken (belonging to the genus *Adelops* and others), on the Continent. Any collector who lives near one of these caves will do well to examine their innermost recesses carefully, and he may find several new species at any time; the genus *Anillus* apparently lives under great boulders, and where practicable, in cases where such are being removed for any purpose, the ground underneath should be closely searched.

Much more might be said on almost all the subjects that have been treated of in these papers; it is, however, hoped from letters and communications received that they have been of some help to those many collectors who seem to be taking up the study of Coleoptera, and that they may lead a few, at any rate, to begin a study which, although it may appear a little dry and hard at first, becomes more and more interesting and fascinating at every step advanced, and which, when once its first difficulties have been mastered, is very seldom given up by any of its followers.

The School House, Lincoln, March 9, 1883.

NOTES ON SEASON 1882.

By W. H. WRIGHT.

I SHOULD like to add my testimony to that of the many who have commented upon the scarcity of Lepidoptera during the above year, and in enumerating some of the insects met with throughout the season to offer a few remarks upon the alleged scarcity.

Until the disastrous salt-laden wind which occurred in May, when most of the trees and hedges were more than usually forward, larvæ of the common species abounding in Epping Forest appeared to be very abundant. Among those which fell freely to the beating-stick I noticed *Hybernica defoliaria*, *Phigalia pilosaria*, *Miselia oxyacanthæ*, *H. aurantiaria*, *H. leucophaea*,

Nola cucullatella, *Diloba cæruleocephala*, and *Scopelosoma satellitia*. After the storm of wind mentioned larvæ were as scarce as they had before been plentiful, and it was with difficulty that I obtained a sufficient number of *D. cæruleocephala* to form a short series, common as that moth usually is on the hedges and black-thorn bushes bordering the Forest.

It was not until collecting the imagines of usual summer species commenced that the scarcity was so marked, and to a beginner in this branch of natural history it could not but prove disheartening, and unless imbued with a considerable amount of perseverance and determination he would run the risk of abandoning a pursuit which appeared so unprofitable from a collector's point of view.

Having made up my mind, at the solicitation of a friend, to reside in one of the best parts of Epping Forest for some short time in May and beginning of June, we did so, and further resolved to do our best towards filling the blanks in our collections. A few *Cidaria suffumata*, *Anticlea derivata*, and *Odontopera bidentata* were secured, and very few of such common insects as *Panagra petraria*, *Cabera pusaria*, &c. That which struck us as forming a most marked contrast with the prevailing scarcity was the abundance of *Fidonia atomaria*, which swarmed in every direction. *Platypteryx unguicula* appeared, however, as usual. Among the Noctuæ on the wing were *Xylophasia rurea*, *X. hepatica*, and a more than usual number of *Erastria venustula*; but on sugar the only one which put in an appearance was *Gonoptera libatrix*.

During our stay we visited that favourite collecting ground of the late Mr. Doubleday, viz., Ongar Park Woods, in search of Diurni, and there we found *Argynnis euphrosyne* on the wing in fairly large numbers, as also were *Hesperia alveolus*, *H. tages*, and *Anthocharis cardamines*. My friend secured a fine variety of *Tephrosia biundularia*. *Macroglossa fuciformis* was taken in good condition; and near the same locality, soon after, *A. selene* and the small Noctuas *Phytometra ænea* and *Euclidia mi* were very plentiful.

By the above remarks it will be seen that such insects as have arboreal larvæ were scarce, while those which fed during the previous autumn on or near the ground were fairly represented. This scarcity of imagines of tree-feeding species, therefore, must have been due to the high winds which prevailed during the autumn of 1881.

During a week's stay in Sussex, near Eastbourne, at the end of June, we found the same scarcity repeated among Geometræ in a marked degree, but such Diurni as should be out at that time were tolerably plentiful. *Argynnis selene* had been very numerous, judging from the large number of worn specimens upon the wing, and *Hesperia sylvanus* was fully represented, and as quarrelsome as usual. *Melitæa athalia*, although not numerous, was still not scarce, and a good series fell to my net, and, probably, had the sun shone more frequently a larger number would have been visible; and I also learned that a little later on *Argynnis adippe* and *Arge galathea* were in abundance. Upon the Downs *Lycæna adonis*, *L. alsus*, and *L. alexis* were on the wing, but not in large numbers, as the sunshine was very sparing.

Among the Noctuæ at sugar we found, some in fair numbers and others abundant, the following:—*Grammesia trilinea*, *Leucania comma*, *Hadena dentina*, *Gonoptera libatrix*, *Agrotis exclamationis*, *Aplecta nebulosa*, *Thyatira batis*, *T. derasa*, *Miana strigilis*, *Xylophasia polyodon*, &c.; but more sparingly *Acronycta aceris*, *Cymatophora or*, and *Diphthera orion*. Although among the Geometræ we took *Asthena sylvata*, *Angerona prunaria*, *Metrocampa margaritata*, *Timandra amatoria*, *Boarmia repandata*, *Tanagra chærophyllata*, and others of common occurrence everywhere, yet they were few and far between.

During the summer, in the vicinity of London, I noticed that such Noctuæ as *Agrotis segetum*, *Axylia putris*, *Noctua plecta*, *Miana strigilis*, *Mamestra persicariæ*, *N. rubi*, *M. furuncula*, *Caradrina morpheus*, *M. brassicæ*, *Orthosia upsilon*, *X. lithoxylea*, *X. polyodon*, and many other Noctuæ whose larvæ feed on low-growing plants, and such of the Geometræ as feed upon herbs, as *Larentia didymata* and *Melanippe hastata*, were nearly as numerous, and in some instances more so than in previous years.

In observing these facts it leads me to the conclusion that a mild wet winter is not so destructive to such moths as pass the winter either as hybernated larvæ underground, or well-protected pupæ in a similar position.

I agree fully with Mr. Kane in his remarks in the 'Entomologist' (Entom. xv., p. 245; xvi., p. 53) that the paucity of such species whose larvæ feed on trees was due to the windy weather of 1881, and I concur in his belief that a mild winter

is not so destructive to pupæ and hibernated larvæ as is generally supposed.

The damp has no doubt a fatal effect upon some pupæ, as many collectors know, yet my experience—although short—goes to prove that larvæ select such dry sites for pupation that a little damp more or less makes very little difference. Most of the Noctuæ which I have enumerated as being well represented will prove this—*e.g.*, *E. venustula*, although never numerous in Epping Forest, yet it was as well represented as in former years, thus proving that the mild winter had no effect upon the snug cocoons at the roots of the *Tormentilla reptans*. Again, that ubiquitous *Noctua xanthographa*, which, having passed the winter in the larval state, came out in such large numbers as to prove a perfect pest at sugar during August, thus tending to prove that the mild winter had little effect upon such insects as hibernate in the larval state.

Although I feel diffident in venturing to differ from Mr. Kane, yet I cannot but disagree with him in regard to the depredations made by beetles, centipedes, and other predaceous insects. My experience tends rather to prove that they are little to blame, as they are not very active or voracious during the winter.

It is a well-known fact that many moths will not emerge from the chrysalis state in the absence of certain atmospheric conditions, and, looking at the low average temperature and want of direct sunshine experienced during the past summer, it is only reasonable to hope that many species which should have emerged are now awaiting the coming summer in order to appear.

I trust that by the above remarks I have proved that the absence during last year of such Geometræ as feed upon trees or bushes is almost wholly attributable to the winds of 1881 and the violent wind storm of May, 1882, they having doubtless destroyed most of the young larvæ then feeding, and that the mild winter did not make such a marked difference in those species whose habit it is to seek the shelter of the earth or the bark of trees either in the larva or pupa state.

Inland Revenue Department, Somerset House, London, March, 1883.

S A L L O W S.

BY JOHN T. CARRINGTON, F.L.S.

It has ever been my desire since taking charge of this magazine to offer through its pages such notes or longer articles as might lead the younger students of Entomology, especially of Lepidoptera, to take greater interest in our favourite study. With this object I write the following lines, further hoping that some of our older correspondents may be reminded that the time has come to renew series of those insects which it is always a pleasure to meet with at this season of the year, after our long entomological hybernation.

Naturally in the early spring the lepidopterist thinks of willows. Although much ought to have been done by the beginner in working up those species of the genus *Hibernia* which appear in spring, such as *H. leucophearia* and *H. progemmaria*, as well as *Anisopteryx æscularia*, besides that common hedgerow species *A. rupicaprararia*; and even, still, if the willows are not in full bloom, as will be the case now in the North of England, sugar will be found for a short time most attractive. At sugar, on mild evenings in February and March, in woods and plantations, most Noctuæ which have hybernated may be taken in fair condition. In addition, should there be birch trees in the neighbourhood, we may reasonably hope to find *Cymatophora flavicornis* in some numbers, as well as *Tæniocampa munda* in many forms, and some varieties are worth looking for. This last species is taken usually in much finer condition at sugar than at willows, being about the earliest to appear of the genus *Tæniocampa*.

It is doubtful whether the word "willows" causes as much pleasure in the mind of the botanist as it does to that of the entomologist, as much difficulty is found in defining the varieties. If I remember rightly there are some twenty-seven species in the genus *Salix*; but to the lepidopterist the chief interest lies with those which flower most and longest. This applies to those fine upright shrubs which ornament our woods in early spring with the brilliant yellow blooms of the male plants, for the flowers of female shrubs in this genus are usually green in colour. Each sex seems attractive to moths, but personally I have generally found the latter the more attractive.

The blossoms of plum and damson trees, in suitable localities, are almost as tempting to insects as are the willows; and at blackthorn bloom in the New Forest, two or three seasons ago, I found moths feeding plentifully after dusk; but as the bushes did not bear more than searching I could not say whether moths get as stupefied on the nectar of blackthorn as their neighbours on that of the willows.

At spring bloom we have our good nights just as at our summer and autumn sugaring, only I think we have more bad nights in spring than at other times of the year, if we except such wretched seasons as the last, which in some localities produced bad nights, and bad days as well, all the year long. East winds are much against us in the spring, and may be looked upon as the chief enemy for the time of the collector. An old northern saying runs, "When the wind is in the east, it is good for neither man nor beast;" and as we ought to accept the modern term, "animal," as applied to every creature possessing the power of locomotion, certainly moths may be classed among the beasts, as regards east winds. When, however, we get a dark night with a soft south wind, with just enough moisture in the air to verge upon our calling it rain, we may go to our woods, when the willows are in bloom, and expect a good night.

Those willow bushes which are isolated, and where there are not too many, are the best, and moths seem rather to favour those which are not too high; although I have had some really good nights at bushes which might almost be called trees. These are best worked, as are all which are clear from undergrowth, with an ordinary bed-sheet. While spreading this under the bush we must take care not to disturb the tree in the least, or even to turn our light on the catkin-bearing branches. All being ready, a sharp shake will cover the sheet with a variety of moths, which stay still for some time in half-inebriated condition. Of course the genus *Teniocampa* is strongest in representatives, though this depends much upon the locality in which we work. In a good old fir plantation we may expect our visitors to be chiefly *Trachea piniperda*, which, contrary to the sullen habits of the species of the above genus, go tumbling about "heads and tails," performing most absurd acrobatic feats before settling down to be quietly boxed. When I went for my first series of this species how astonished was I to see some

hundred or hundred and twenty specimens come tumbling into the sheet, and all commence skipping about as though for mutual amusement.

In oak woods in the South of England we may expect several good species: first there are the hybernated *Hoporina croceago*, *Dasyampa rubiginea*, or even the very rare *Cerastis erythrocephala*. If we have the luck to get a female of either of these it is well to save and even sacrifice a specimen, by allowing it to damage itself too much for cabinet purposes, on the chance of obtaining eggs. In the case of *H. croceago* it may be kept alive for some weeks in a box with a few dead oak leaves, if fed with sugar and water. Others, which have lived through the winter in the perfect state, are *Xylina semibrunnea*, *X. petrificata*, and *X. rhizolitha*. Eggs from any of these are useful, especially the two former, which are much wanted by northern collectors. The sugar and water treatment applies to all these cases, and it is best to turn in both sexes together, as the pairing of these hybernated Noctuæ appears to take place in spring rather than in autumn.

The species of the genus *Tæniocampa* are generally easily distinguished, even by artificial light and before boxing, unless we except *T. populeti*, which may be overlooked for dark *T. stabilis*. The former species is found in places where aspen (*Populus tremula*) grows, and should be carefully watched for in such localities. Excepting *T. leucographa*, *T. populeti* is now the rarest moth of the genus; although I remember in my early collecting days how we used to walk seven miles each way for seven nights in the week in search of the then rare *T. opima*, and if we got four specimens during the whole night's work of five or six hours we were so elated as to forget that we were tired. That was before our *confrères* of Liverpool had found that this species occurs commonly on the sandhills at Wallasey. There they are found by searching the low herbage, especially the dwarf roses (*Rosa spinosissima*), at night with a lantern. In this way I have taken as many dozens in a couple of hours as we used to take individuals in a season at the Yorkshire sallows. *T. leucographa* is a good moth, and appears to be more northern in its range in England than most of the other members of its family. I found it one season at Bishop's Wood, near Selby, in Yorkshire; the night was very wet, and the sallows could only be searched and not shaken, so that I got less than a dozen specimens.

I have never used a "Bignell" beating-tray for working salallows, but should think its shape very suitable. An inverted old umbrella, the larger the better, is most generally used, being portable, and not such back-aching work as the sheets. A man must be an enthusiast to work the latter for a whole season, especially if by himself, for the trouble of spreading, refolding, and carrying a generally wet sheet, would almost be punishment severe enough for a member of the Fenian "inner circle."

Of the odd species to be found at salallow bloom one would hardly expect to find butterflies at night. We have, however, heard of *Pieris napæ* falling, very drunk, and once of a *Vanessa antiopa*, but to hunt at night, and at salallows, for this rarity is a very roundabout and improbable way of getting it. A number of *Geometræ* may be so obtained, but these are either more abstemious than the grosser *Noctuæ*, or are less susceptible to the nectar, for on shaking the bush they usually fly away, and seldom fall an easy prey to the collector; of them amongst oak, *Eupithecia abbreviata* is sure to occur. On occasions we may meet with hybernated *Cidaria psittacata* and *C. miata*, or *Scotosia dubitata*. All the spring species of this division out at the time turn up now and then, and these include *Lobophora lobulata*, *Cidaria suffumata*, *Anticlea badiata*, and the very pretty *A. derivata*; *Aleucis pictaria* has also occurred at salallows in Essex. Of Tortrices, the oak-feeding *Sarothripa revayana* occurs, but generally worn; females of this species may be "sleeved" on oak boughs, in some place where they will not be disturbed, and so fine examples of the next generation obtained.

If one arrives too early for the night-flying Lepidoptera, or wants work during the day, it is well to watch the bloom during sunshine for the wild-flying *Brephos parthenias*, or rarer *B. notha*. On dry days the catkins, which are getting over, should be shaken off and gathered for larvæ, which feed in them; these may be placed in a bandbox, over which muslin has to be stretched. This may be done by knocking out the lid, and placing the rim over the muslin. From these catkins a large number of species may be reared, such as *Xanthia cecrigo*, *X. silago*, *Epunda viminalis*, *Eupithecia tenuiata*, &c. Again young shoots of salallow should be assiduously gathered, especially when spun together by some slight web. These need not be examined when collected, but if fresh food be added from time to time, so long as any larvæ

be seen, a great number of most interesting species will be reared. Among the best species I have bred in this way was *Lobophora sexalata*, as also *Tethea retusa*.

Sallows come into bloom much according to locality, and whether the season is forward or late. I have seen sallows well out in the southern counties at the end of February; while in the Highlands of Scotland I had a grand night's collecting at them on the 17th of June, as described by me in the 'Entomologist' (Entom. ix. 272). The collector should, therefore, go by daylight, first to see if the bushes bear catkins, and better still to mark their position, and so save much time and trouble at night.

On nights unsuited to moths feeding at the sallow catkins, the collector's time may be employed by searching the herbage and twigs of trees for moths at rest. Of course no such bags as are made from the sallows must be expected; nevertheless many species may be added to the collection in this way, and some quite unexpectedly. Spring-feeding larvæ, especially on the low sallow bushes and dwarf sallow, will fully occupy our time, and by no means unprofitably.

I hope that the randomly written lines just penned may induce some collector to work with success during the coming spring, and better still to tell us in these pages of his good luck.

Royal Aquarium, Westminster, S.W., March 21, 1883.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

EPPING FOREST.—The Legislature has again resolved that Epping Forest shall be kept "unenclosed and unbuilt on, as an open space for the recreation of the public," and has decreed that an unnecessary railway through its already too small confines is neither calculated to "preserve the natural aspect of the Forest," nor is it in accordance with either the letter or spirit of the Epping Forest Act, 1878. Thanks to the good work done by the Commons Preservation Society and to the energetic action taken by the officers of the Essex Field Club, ably seconded by most of the Natural History Societies within and in the neighbourhood of the metropolis, the Great Eastern Railway (High Beech Extension) Bill, 1883, was defeated in the House of Commons on its second reading by 230 votes against 82, on March 12th last.

We are disposed to think that the leading journal expressed public feeling generally in the following paragraph:—"The vote of the House of Commons has smashed, pulverized, and utterly destroyed the wanton attempt of the Great Eastern Railway—supported, we are sorry to think, from not too disinterested motives by the Corporation of London, the appointed Conservators of Epping Forest—to ruin the seclusion of the most picturesque part of the Forest by driving a line from Chingford to High Beech. . . . The despised entomologists will now be able to pursue their butterflies in peace, and the lovers of the sylvan scenery which never palls, as Lord Beaconsfield said, will be able to enjoy the solitude of the Forest without being disturbed by the intrusion of an embankment which would only be more offensive if, as Sir Thomas Chambers suggested, a futile attempt were made to make it look like a natural undulation of the ground" ('Times,' March 13th, 1883). The founder of this Journal once wrote, "When I am gone to that place from whence there is no return; when this little effort is defeated by the hand of the aggressor; I trust some future entomologist may engrave on my tombstone, 'He *tried* to save the People's Forest for the people.' I desire no better epitaph" (Entom. v., 306, and cf. vol. viii., pp. 1—4). How it would have rejoiced him to have thus found the Forest really confirmed to the people; and after so brilliant a victory on behalf of the people's rights, how he would have prided himself on being one of the "handful of aristocratic bug-hunters" to whom Mr. F. W. Buxton so tenderly alluded in his speech in favour of the Bill.—E. A. F.

DIURNI IN CORNWALL.—At Truro last year I found Diurni more abundant than would have been expected owing to the badness of the season generally. The following I captured there during a fortnight in August and a week in the middle of September:—*Vanessa urticæ*, *Pyrarga egeria*, *P. megæra*, *Satyrus semele*, *Epinephele janira*, *E. tithonus*, *Thecla quereus*, *Polyommatus phlæas*, *Lycæna icarus*, *L. argiolus*, *Rhodocera rhamni*, *Pieris napi*, *P. rapæ*, *P. brassicæ*, and *Hesperia linea*, all abundant. I also met with, but not abundantly, *Argynnis paphia*, *Pyrameis atalanta*, and *Epinephele hyperanthus*.—E. F. BENSON; Lambeth Palace, London.

NOTODONTA CHAONIA.—On April 10th, 1882, a friend and myself made up our minds to spend Easter Monday at Tilgate

Forest, with the hope of finding *Endromis versicolor*. To make up for our disappointment in not finding that species, I found a female *N. chaonia*, in fair condition, sitting quietly on a branch of the birch. I took it home alive. The next morning it laid a good batch of eggs; on April 27th they hatched, thirty-three in number; by the time they were full-fed twenty-seven went to earth, that being from June 20th to 28th. Perhaps it may interest some to know the colour of the young larva, as authors only give the description of the adult larva. The markings are the same, but the colour is very different, being a very bright pea-green, with the stripes before the last change bright yellow.—M. PHIPPS; Southboro' Brewery, Tunbridge Wells.

DESCRIPTION OF THE LARVA OF *MIANA STRIGILIS*.—The larva of this very common moth seems so little known to lepidopterists generally that it may be advisable to give a description of it. It may readily be found from the middle to the end of April ensconced head downwards within the stems of *Dactylis glomerata*, or on damp evenings, like others of the genus, exposed on or near the top of the blades of this and other grasses. Length when at rest about three-quarters of an inch, but when crawling quite an inch, and is tolerably plump in proportion. The head has the lobes rounded, and is smaller than the second segment; body cylindrical, tapering a little towards the head, but attenuated considerably towards the anal extremity; skin semi-translucent, nearly smooth, has a tough appearance, and is clothed with a few minute hairs. Ground colour dull purplish-brown; the head, legs, frontal and anal plates, glossy pale brown; medio-dorsal and subdorsal stripes very distinct, dull pale yellow; there is also an indication of another but much less distinct pale line between the subdorsal and spiracular regions; there are no perceptible spiracular lines. Spiracles large and very distinct, they are nearly round, but slightly oblong, and intensely black. Ventral surface uniformly dull pale yellow.—GEO. T. PORRITT; Huddersfield, March 8, 1883.

LARVÆ OF THE BRITISH PTEROPHORI.—I am still wanting larvæ of several of our plume moths for observation and the completion of the history of this family now appearing in the 'Entomologist,' among which I may mention *Platyptilia bertrami*, which feeds in young shoots of yarrow (*Achillea*) in May and June). *P. isodactylus*, feeds in stems of water ragwort (*Senecio*

aquaticus) in May and again in August; *P. zetterstedtii*, which probably feeds in the stem or shoots of one of the Compositæ growing in woods, possibly golden-rod (*Solidago virgaurea*) or a species of *Senecio*; *Amblyptilia acanthodactylus*, to be found feeding on several low-growing plants in June and July. I once found a larva on geranium in a garden at Ealing in August. Should any entomologist obtain larvæ of either of the above species, or any other not yet described in this series of papers, I shall be greatly obliged if he will kindly favour me with a couple for figuring and description. It is well to remember a locality where imagines of a plume moth of which we require larvæ have been observed, for there, if we only know the food-plant, we may commence the search with some degree of confidence as to the result. Of course a knowledge of such data would help considerably in the finding of the larva of any species of Lepidoptera, but, considering the very sluggish and stay-at-home habits of the majority of the "plumes," I submit that without some idea of the exact spot where such insects as *Leioptilus lienigianus*, *Oxyptilus teucarii*, and *Mimæseoptilus phæodactylus* occur, searching the food-plant for the larvæ of either species would usually be unsuccessful. I do not imply that it is useless to search for the larva of a species if we are not aware of the imago having occurred in the neighbourhood of the food-plant; on the contrary, such searching might result in adding new localities for some of our rarer Pterophoridæ.—RICHARD SOUTH; 12, Abbey Gardens, St. John's Wood, London, N.W., 1st March, 1883.

ÆCHMIA DENTELLA NEAR CROYDON.—I have pleasure in recording the capture of twenty fine specimens of this rare insect from a hedge of very mixed growth at Crombhurst, near Croydon. The specimens were taken from the first to the second week in June last, being then in beautiful condition. I also met with a few *Phoxopteryx derasana*, one *Phtheocroa rugosana*, and three *Æcophora trisignella*.—WILLIAM MACHIN; 22, Argyle Road, Carlton Square, E., March 16, 1883.

MUTILLA RUFIPES.—One morning last June or July (I am not sure which), whilst returning from Stakes Wood, on the edge of a small copse between Stakes and Purbrook I found a wingless insect, of which I enclose a sketch. The description is as follows:—Head black, thinly covered with black hair. Two

compound eyes, placed a little behind the antennæ, and without any trace of ocelli. The antennæ resemble those of the mason bees. Thorax: the prothorax black, the meso- and metathorax red. The whole is thinly covered with black hair. The legs are black, and there is no sign of elytra or wings. Abdomen black, with the exception of a white spot on the first segment, and two placed opposite to each other, one on either side near the anal segment. The spots are thickly covered with silky white hair, and the remainder of the abdomen with black. If any reader of the 'Entomologist' can inform me to which order it belongs, with its name, I shall be obliged.—W. T. PEARCE; Buckland, Portsmouth.

[I have little doubt but that the insect described and figured by Mr. Pearce is the female of *Mutilla rufipes*, Latr. (= *ephippium*, Fabr.), a somewhat local species of fossorial Hymenoptera which is supposed to be parasitically attached to humble bee (*Bombus*) nests.—E. A. F.]

ASILUS CRABRONIFORMIS.—I have repeatedly seen it stated that *Asilus crabroniformis* sucks the blood of animals, and Miss Ormerod gives it as injurious to agriculture. Can anyone prove the above statements? The *Asilus* of the Romans (Mr. MacLeay observes) was the *Æstrus* of the Greeks and the *Hæmatopota* of the present system, a fly exceedingly annoying to horses, whereas our *Asili* prey on other insects, especially the Diptera. They prefer resting on the ground, particularly in sandy situations, and the larvæ feed upon the roots of plants underground, where they change to pupæ covered with spines. I believe it is as erroneous to call *Asilus crabroniformis* a blood-sucker as it is to call an *Æschna* a horse-stinger, as is done in various parts of England.—C. W. DALE; Glanvilles Wootton, Sherborne, Dorset, March 11, 1883.

EARLY BEES.—The present month not only came in like a lamb, but brought with it also a few bright and very warm spring-like days, causing the country to put on quite a vernal appearance. On the 4th inst. I saw two specimens of *Bombus virginialis* disporting themselves along the hedge-banks in the morning sun, and on the 5th, an equally bright and pleasant day, I saw several specimens of this same *Bombus*, as well as a *B. pratorum*. The same afternoon six or seven males of *Anthophora acervorum* were seen darting in and out among a

small bed of wallflowers just coming into blossom. After this we had a continuance of cold easterly winds and snow storms till the 14th, which was another bright and spring-like day, and tempted these bees forth again; honey bees too were particularly busy among the crocuses this day. Now came more cold blows, and at the present moment instead of spring we have winter in all its grim and stern reality.—V. R. PERKINS; Wotton-under-Edge, March 20, 1883.

NOTE ON THE GENUS *HEMIDEINA*.—Notes on the habits of that somewhat obscure race of insects included in the genus *Hemideina* and its allies will probably be an interesting subject to your readers. The following I do not offer as anything very complete, but merely as the experience of the last six months. These insects inhabit only one species of tree in the forest that I know of, viz., *Melicytus ramiflorus*, or, as it is commonly called, the locust tree. They form tunnels through the main stem and branches, having holes communicating with the exterior at various distances up the tree. There is also generally a large cavity at the base close to the ground. The diameter of the tunnels is mostly under six lines; the largest I never found over nine. The trees containing specimens may be readily told by the presence of the above-mentioned holes. To extract one of these insects without injury is no easy matter, but is most successfully done by the following method:—First procure a small axe, and cut in about three-quarters through the trunk, just below one of the holes; then insert the axe so as to split the wood off in long pieces, thus removing one side of the tunnel. The first thing seen on approaching an insect will be two red threads, which are the antennæ laid over its back behind it in the tunnel. An incision then made about ten inches below, and the piece split off, exposes the insect to view in its tunnel, which is frequently filled with *débris* containing various small insects, such as *Blattæ*, &c. The width of the gallery seldom exceeds that of the creature's head; the great posterior legs are stretched out behind, and by prizing against the floor of its burrow serve to propel it; the fore-legs are placed in front, and are firmly fixed by the tarsal claws, and thus pull the insect at the same time as the hind and intermediate ones push, so that it is enabled to proceed at a considerable rate down these holes. The mobility of the body is

something wonderful, adapting itself to the shape and size of the cavity in which it happens to be, and thus it is that one of these insects can go through any hole that is large enough to admit its head. When it is fairly out of the tree it endeavours to escape—if a female—by jumping away about three feet at a time and seeking concealment amongst the various litter on the ground; but if a male it is much more ferocious, thrusting its hind legs up in the air, clinging firmly to the tree with the other two pairs, and biting very violently anything presented to it; and both sexes emit a peculiar grating sound when disturbed. These insects evidently leave their tunnels of a night and roam about the trees, as I found the crop of one I dissected for stuffing full of particles of green leaves; in the lower parts of the alimentary canal I found half-digested wood. I should mention that these insects make their tunnels *always* in *living* trees, and are not found in rotten wood, as some imagine. The above are sketches from the habits of *Hemideina capitolina* and *megacephala*, these being the only species I have as yet seen.—GEORGE V. HUDSON; Karori, Wellington, N.Z., Dec. 30, 1882.

REVIEW.

Catalogue of British Coleoptera. By Rev. W. W. FOWLER and Rev. A. MATTHEWS. West, Newman & Co. 1883.

WE have read with great satisfaction this catalogue of British Coleoptera. However far it may fall short of perfection, a point perhaps impossible to attain, there can be no doubt that it is an improvement upon all previous ones, and a long step in the right direction. For many years past we have been accustomed to hear from every quarter complaints of the faultiness of our present systematic arrangement, but until lately no one has had the courage to inaugurate any decided improvement. During the past year, however, Dr. Horn, on the other side of the Atlantic, commenced the attack by his revision of the Carabidæ, a work which only requires careful study to be well appreciated by every entomologist, and we are glad that Dr. Horn's system has been adopted in the present Catalogue. Again, it appears to us that a great improvement in classification has been effected by following the views of Dr. Leconte, and removing the

Rhyncophora from the abnormal position which they have hitherto held, and placing them as an isolated group at the end of the list. In their previous position the Rhyncophora stood as a "parenthesis," so to say, or rather an intercalation, between groups intimately allied to each other, but with no link in common between them and the Rhyncophora.

Another manifest improvement is accomplished by placing the Heteromera at the end of the Stomatophorous Coleoptera, since they form, though it may be in mimicry, an epitome of all the preceding series. In the complex series of the Clavicornia another great improvement has been made by a slight alteration in the position of the Staphylinidæ, and also by the introduction of the Coccinellidæ and their allies who there find a home much better suited to their characters than any vicinity to the Chrysomelidæ could offer. In fact, the whole Clavicorn series seems to be arranged on a better linear plan than has yet been adopted, and this is due in a great measure to the large amount of careful dissection which we understand to have been done by Mr. Matthews expressly for the Catalogue. We think that the new introductions have been carefully inserted, and also that good judgment has in general been exhibited with respect to the species omitted and those pronounced dubious, but think that more might with advantage have been placed in the latter category. We should have liked to see some distinction made between those insects which are indigenous or otherwise, but it is very difficult in many cases to draw the line between truly native and doubtfully introduced species, and especially those which have become completely naturalized. A great improvement is made on some former catalogues by the addition of the author's names to the genera.

There is a copious index, without which no reference Catalogue can be really complete. The type is excellent, and the work has been carefully got up and well executed by Messrs. West, Newman and Co. We congratulate the authors on the publication of their Catalogue, and can thoroughly recommend it to the attention of our readers.

J. A. P.

THE ENTOMOLOGIST.

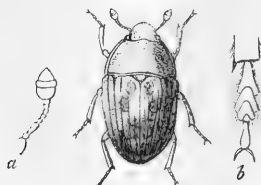
VOL. XVI.]

MAY, 1883.

[No. 240.

DESCRIPTIONS OF THREE NEW SPECIES OF COLEOPTERA (*NITIDULIDÆ*) FROM CERAM.

BY A. SIDNEY OLLIFF.



LASIODACTYLUS STELIDOTOIDES, Olliff.

a. Antenna. b. Tarsus.

THE three species of Nitidulidæ described in the present paper are from Ceram; by whom they were collected I cannot ascertain; when they came into my possession I received no information respecting them except as regards their locality. Of one of them (*L. stelidotoides*) I have seen in various collections specimens from Gilolo, Ceram, and Macassar; these latter were, I believe, collected by Mr. Wallace. A wood-cut of this species is given above; the other (*L. notabilis*) will be figured in Mr. Waterhouse's 'Aid to the Identification of Insects' now being published in quarterly parts.

CARPOPHILUS, Stephens.

Carpophilus assimilis, n. sp.

Elongate, slightly more attenuated in front than behind, rather convex, shining black, very sparingly covered with short black pubescence. Head rather large, transverse, extremely finely and closely punctured. Clypeus less closely but equally finely punctured. Prothorax in front considerably broader than the head, transverse, very finely and closely punctured; anterior

angles very slightly obtuse; sides gently rounded in front, parallel for the posterior two-thirds; posterior angles right angles; with two feeble impressions on each side at the base. Scutellum transverse, rounded behind, finely and closely punctured in the centre, the margins impunctate and shining. Elytra a little longer than the prothorax, disc rather flat, anterior angles very slightly obtuse, sides subparallel; apex of each elytron obliquely truncate. Abdomen with two segments exposed, finely and very closely punctured. Under side finely punctate. Antennæ and legs pitchy brown. Length $3\frac{1}{2}$ mm.; width 2 mm.

This species closely resembles *Carpophilus fusus*, Murray (Trans. Linn. Soc. xxiv. p. 370). It may be distinguished by its shorter and broader prothorax, more shining surface, and more regularly and less closely punctured elytra.

LASIODACTYLUS, Perty.

‘Delectus Animalium,’ 1830, p. 34.

Lordites, Erichson. Germ. Zeitschr. Ent. 1843, iv. p. 316.

Herr Reitter has pointed out that these genera are synonymous (Verh. Ver. Brünn. xii. p. 86).

Lasiodactylus notabilis, n. sp.

Cuneiform, much broader in front than behind, brown, somewhat shining, the margins broad and yellowish testaceous. Head transverse, embedded within a semicircular emargination of the prothorax, rather finely and moderately closely punctured and deeply impressed in front, more closely punctured at the base. Clypeus rather finely and closely punctured, with a slight elevation at the base. Antennæ testaceous, the club darker. Prothorax at the base more than twice as broad as long, narrower in front than behind, moderately finely and rather closely punctured, deeply emarginate in front; anterior angles slightly obtuse; sides rounded; posterior angles acute, slightly produced and reflexed. Scutellum transverse, rounded behind, rather finely punctured. Elytra about twice as long as the head and prothorax together, as broad at the base as the prothorax, narrowed behind, rather finely striate-punctate, except the apex which is smooth, the interstices raised, moderately broad, and impunctate; anterior angles obtuse; sides oblique, rounded behind, margins finely punctured and slightly reflexed, abbreviated posteriorly; with a deep impression on each side at the base: each elytron with an

obscure testaceous spot on the disc, before the middle, united to the shoulder by a narrow testaceous line, and another similarly placed spot just behind the middle. Under side shining pale testaceous, the sterna very finely and irregularly punctured, abdominal segments still more finely punctured. Legs pale testaceous. Length 5—6½ mm.; width of prothorax 3—3¾ mm.

This insect, in its attenuated form and peculiar sculpture, differs from any previously described species of the genus. In one specimen the testaceous stripes at the base of the elytra are considerably broader than in the others, the discal spots are also proportionately larger.

Lasiodactylus stelidotoides, n. sp.

Lordites stelidotoides, Murray in litt.

Oval, about twice as long as broad, pitchy brown, very sparingly clothed with very fine yellowish-grey pubescence; the margins narrow, reflexed and rather finely punctured. Head transverse, finely and closely punctured. Antennæ with the apical joint testaceous. Prothorax at the base more than twice as broad as long, rather narrower in front, moderately closely and finely punctured; anterior margin strongly emarginate, the sides of the emargination oblique; anterior angles slightly obtuse; sides arcuate; posterior angles slightly acute. Scutellum transverse, rounded behind, very finely and closely punctured. Elytra about twice as long as the head and prothorax together, as broad at the base as the prothorax, moderately strongly striate-punctate, the alternate interstices rather wide and costiform; shoulders prominent; anterior angles slightly obtuse; sides arcuately narrowed to the apex: each elytron with two rather obscure dull red spots, one near the scutellum, the other on the disc, considerably before the middle, and a moderately distinct irregular lunate reddish marking just behind the middle, the convex side of which is towards the suture. Legs piceous, tarsi a little paler. Length 4½ mm.; width 3 mm.

For this interesting species I have adopted the MS. name, *stelidotoides*, proposed for it by the late Mr. Andrew Murray. In form it is remarkably like a *Stelidota*, the absence of a posternal process will, however, at once remove it from that genus. I have made a careful dissection of the mouth-organs, and find that they agree with those of the genus *Lasiodactylus*.

INTRODUCTORY PAPERS ON ICHNEUMONIDÆ.

BY JOHN B. BRIDGMAN AND EDWARD A. FITCH.

No. III.—CRYPTIDÆ (*continued*).HEMITELES, *Grav.*

SECTION 1.—Thorax and abdomen black.

DIVISION 1.—Spiracles of metathorax large and oval.

Abdomen subsessile; femora and tibiæ red, apex of hinder black (male). - - - - - 1. *breviventris*, $2\frac{1}{2}$ lines.

DIVISION 2.—Spiracles of metathorax small and generally circular.

Metathoracic areæ generally complete and distinct.

A. Second segment of abdomen with no perceptible sculpture, or hardly any.

a. Entirely black (male). - - - - - 4. *tenebricosus*, $1\frac{1}{2}$ —2 lines.b. Legs red, hind coxæ generally black at the base (male and female).
13. *similis*, $1\frac{1}{3}$ — $3\frac{1}{4}$ lines.

Note.—This species is sometimes found with the abdomen more or less chestnut.

B. Second segment of abdomen with sculpture.

a. First segment aciculate, or longitudinally wrinkled; the 2nd more or less punctate, certainly so at the base.

* Legs fulvous, or straw-coloured.

† Front coxæ white.

‡ Face white (male). - - - - - 21. *chionops*, 2 lines.

‡† Face not white; apex of hind tibiæ brown (males and females).

§ Styles of male not projecting; stigma whitish.

submarginatus, $1\frac{1}{2}$ — $1\frac{3}{4}$ line.§§ Styles projecting; stigma pale piceous. 14. *fulvipes*, $1\frac{1}{5}$ —2 lines.†† Front coxæ pale fulvous (female). - 22. *infirmus*, $1\frac{1}{4}$ — $1\frac{1}{3}$ lines.

** Front legs pale, hinder more or less brown.

× Supero-medial area complete (male and female).

23. *tristator*, $1\frac{1}{3}$ — $2\frac{1}{3}$ lines.× × Supero-medial area not closed behind (male). - *obscurus*, $1\frac{1}{2}$ line.

b. First and 2nd segments of abdomen punctate; 1st sometimes subaciculate.

* Greater part of the legs of the female red.

† Aculeus of female longer than the abdomen.

Legs red, coxæ and trochanters black; hind tibiæ of male partly black (male and female). - - - 30. *melanarius*, $1\frac{1}{2}$ —2 lines.

†† Aculeus about as long as the abdomen.

‡ Hind coxæ black, front ones pale, at the most black at the base; front trochanters pale (female). - - - 31. *pictipes*, 2 lines.* Base of the 3rd segment more or less red; scape beneath yellowish; hind trochanters partly black (male). 33. *castaneus*, $1\frac{1}{2}$ —2 lines.‡† All the coxæ and trochanters red, or the former black, especially the hind ones, but front ones not pale (female). 32. *sordipes*, $1\frac{1}{2}$ line.

- ** Front femora and tibiæ red, apex of hinder one black (male and female). - - - - - 20. *vicinus*, 2 lines.
 c. First and 2nd segments of abdomen coarsely aciculate; mouth and legs red; antennæ of female with a narrow white ring (male and female). - - - - - 41. *niger*, 3 lines.

SECTION 2.—Thorax black; abdomen black; apical margins of intermediate segments pale yellow.

First and 2nd segments aciculate; aculeus one-third of abdomen (male and female). - - - - - *marginatus*, $2\frac{1}{4}$ lines.

SECTION 3.—Thorax black; abdomen red and black; apex sometimes whitish.

Metathoracic spiracles small and circular.

A. Antennæ tricoloured (females).

- a. Second segment and legs[†] fulvous; apex of hind femora and tibiæ black; aculeus about one-sixth of abdomen. 3. *varicornis*, 1 line.
 b. Margin of 1st and the 2nd segment red; last segments, legs and mouth stramineous; aculeus hardly half of abdomen.
 18. *contaminatus*, 2 lines.

B. Antennæ bicoloured (white ringed) (females).

Segments 1st to 3rd and legs almost entirely red.

- a. Abdomen smooth and shining; aculeus about half of abdomen.
biannulatus, 2— $2\frac{3}{4}$ lines.
 b. Abdomen finely and closely punctured; aculeus about one-third of abdomen; wings with a fuscous band behind the stigma.
subannulatus, $2\frac{1}{2}$ lines.

C. Antennæ black, or red at the base.

a. Second segment of abdomen without sculpture.

* Metathorax sloping from front to back, not angulated.

First segment long and slender; middle of abdomen reddish stramineous (†), or stramineous (††).

- † Hind legs more or less dark (male). - - 5. *imbecillus*, 2 lines.
 †† Hind legs pale (male and female). - - 7. *necator*, 1 line.

** Back part of metathorax almost at right angles to the front part.

† Stigma white at the base.

Middle of abdomen and greater part of legs red; aculeus about half of abdomen.

§ Coxæ black.

First segment of abdomen with deep, scattered punctures (male and female). - - - - - 27. *ridibundus*, $2\frac{1}{2}$ lines.

§§ Coxæ almost entirely red.

× First segment of abdomen aciculate; wings of female with fuscous band (male and female). - - 11. *oxyphimus*, $2\frac{1}{2}$ lines.

× × First segment smooth; wings without band (female).

politus, about 2 lines.

†† Stigma not white at the base.

o Antennæ much thickened (as in *Phygadeuon*).

→ Abdomen lighter or darker chestnut; apical margin of anterior segments paler, and legs more or less pale, as well as base of antennæ; aculeus one-third of abdomen (female).

12. *crassicornis*, about 1 line.

++ Basal half of antennæ, middle of abdomen and legs red; aculeus two-thirds of abdomen (female). - *mixtus*, about $\frac{1}{2}$ line.

oo Antennæ not thickened.

++ Metathoracic areæ complete and distinct.

∞ Legs almost entirely pale red; middle of abdomen more or less red or testaceous.

Segments 1st to 5th of abdomen and legs red; aculeus half the length of abdomen. - *argentatus*, $3\frac{1}{4}$ lines.

Note.—Unfortunately Gravenhorst gives but little more than a colour description of *Hemiteles argentatus*, described from a specimen taken by Mr. Hope, probably in the neighbourhood of Netley. It was sent to Gravenhorst after he had written the second volume of his Monograph. The type specimen is now lost; if it had been in Gravenhorst's collection, Taschenberg would have noticed it. Professor Westwood has been kind enough to hunt through Hope's collection, and finds it is not there, adding that probably it was never returned by Gravenhorst.

! Back part of metathorax with two intermediate perpendicular lines.

1. Supero-medial area of metathorax about as broad as long, rounded in front, incurved below, wider in front than behind (male and female).

Aculeus one-third or one-fourth of abdomen.

6. *micator*, $1-1\frac{2}{3}$ line.

2. Supero-medial area much longer than wide (male and female).

Aculeus two-thirds of abdomen. - *gyrini*, 2 lines.

3. Supero-medial area transverse (female).

* Aculeus two-thirds of abdomen. - *persector*, $2-2\frac{1}{4}$ lines.

** Aculeus one-fourth of abdomen (female). - *ruficaudatus*, $2-2\frac{1}{2}$ lines.

!! Back part of metathorax without intermediate perpendicular lines (female). - 8. *dubius*, $1\frac{1}{2}$ line.

∞∞ Front tibiæ, apex of front femora and segments 2nd to 6th red (male and female). - 9. *tenuicornis*, $2-3\frac{1}{2}$ lines.

++++ Metathorax with only the two transverse lines distinctly defined (male and female). - 2. *furcatus*, $1\frac{1}{2}-2$ lines.

b. Second segment of abdomen punctured; 1st longitudinally wrinkled or aciculate.

* Metathorax with two transverse lines, space between them coarsely (†) or finely (††) aciculate; the supero-medial area undefined at the sides.

† Abdomen black, some of the segments with red margins.

‡ All the coxæ black; segments 1st to 3rd red-margined (male).

24. *limbatus*, $2\frac{1}{3}$ lines.

†† Hinder coxæ black, front ones white; all the segments red-margined (female). - 25. *conformis*, 2 lines.

†† Third segment red, and all the coxæ black (male).

rufocinctus, Gr., $2\frac{1}{2}$ lines.

Note.—This is not *Hemimachus rufocinctus*, Katz.; and is not the male of *Pezomachus instabilis*, Foerst.

** Areæ of metathorax, especially the supero-medial area, distinct.

Back part of metathorax with two distinct intermediate longitudinal lines.

- § Second segment of abdomen very finely punctured.
 Segments 2nd to 4th and legs red; hind coxæ, apex of hind femora and tibiæ, also apex of hind tarsal joints, black; aculeus very short (male and female). - - - 15. *varitarsus*, $2\frac{1}{4}$ lines.
- §§ Second segment densely and coarsely punctured.
 Aculeus a little more than half of abdomen (females).
- × Segments 2nd to 4th red; sides brown; legs red; tarsi fuscous.
 16. *decipiens*, $2\frac{1}{2}$ lines.
- × × Abdomen red, apex black; legs and basal half of antennæ red.
 19. *melanopygus*, $1-1\frac{2}{3}$ line.
- × × × Segments 2nd to 4th chestnut; legs red, base black, as well as apex of hind femora and tibiæ; margins of segments polished.
 20. *vicinus*, 2 lines.
- c. Second segment punctured; 1st either punctured or smooth.
 * Metathorax moderately short, the back part almost perpendicular.
 † Punctures on 2nd segment very much scattered.
 ‡ Segments 2nd and 3rd more or less red; legs red; hind coxæ of male black, sometimes front ones also; aculeus about one-third of abdomen (male and female). - 28. *æstivalis*, $2-2\frac{1}{3}$ lines.
- ‡ ‡ Segments 2nd to 4th red or chestnut; femora and tibiæ red; aculeus about half of abdomen (female). 27. *ridibundus*, $2\frac{1}{2}$ lines.
- ‡ ‡ Second segment densely punctured.
 Aculeus of female nearly as long as the abdomen.
 § Middle of abdomen and legs red; coxæ of *castaneus* male, black.
- × Back part of metathorax with the intermediate longitudinal lines.
 o Base of flagellum of female red; aculeus straight.
 Sides of post-petiole of female slanting; 3rd segment of male more or less red, sometimes almost or quite black (male and female).
 33. *castaneus*, $2-2\frac{1}{2}$ lines.
 Post-petiole quadrate (female). - - - ? 33. *castaneus*, var.
- oo Antennæ black; aculeus curved downwards (female).
 34. *inimicus*, $2\frac{1}{2}-3$ lines.
- × × Back part of metathorax without the intermediate lines; superomedial area almost pentagonal (female).
 35. *floriculator*, $2-2\frac{3}{4}$ lines.
- §§ Base of 1st segment, base and apex of 2nd segment, femora, tibiæ and tarsi, almost entirely red; metathorax with only the two transverse lines. - - - - - *zonatus*, $2\frac{1}{2}$ lines.
- ** Metathorax elongated, without distinct arææ, the back part very oblique.
- + Back part of metathorax with intermediate longitudinal lines.
 First segment of abdomen almost smooth; 2nd shining, with feeble puncturing; back of 2nd to 4th segments red; legs reddish straw; apex of hind femora and tibiæ black (females).
 36. *fragilis*, 2 lines.
- + + Back part of metathorax without the longitudinal lines.
 Middle of abdomen partly red; base of antennæ red.
- ++ Legs red (male). - - - - - 37. *monozonius*, 2 lines.
- + + + + Legs red, hinder one partly black (male). *palpator*, Gr., $2-3$ lines.
- d. First and 2nd segments aciculate, the latter sometimes smooth at the apex.

- * Second and 3rd segments red (†), or pitchy brown (††).
- † Femora and tibiæ red, hind ones black or brown at the apex.
- † Front coxæ black (male). - - - 43. *scrupulosus*, $2\frac{1}{2}$ lines.
- †† Front coxæ red; aculeus rather more than one-fourth of abdomen (female). - - - - - *distinctus*, 2 lines.
- †† Front legs pale yellow, hind ones brown; base of tibiæ pale yellow (male). - - - - - 39. *tenerimus*, $1\frac{1}{3}$ line.
- ** Third segment of abdomen and front tibiæ red (male).
40. *dissimilis*, 3 lines.
- *** Second to 4th segments of abdomen and legs red; wings with a dark brown band; aculeus one-fourth of abdomen (female).
incisus, $2\frac{3}{4}$ lines.

SECTION 4.—Thorax more or less red.

- A. Second segment of abdomen without sculpture.
Middle of abdomen and legs straw-coloured (male and female).
7. *necator*, var.
- B. Second segment of abdomen with sculpture.
 - a. Wings of female with two or three dark bands (male and female).
 - * Abdomen black. - - - - - 26. *bicolorinus*, $1\frac{1}{4}$ line.
 - ** Abdomen more or less red; base of hind tibiæ whitish (generally larger than *bicolorinus*). - - - 29. *areator*, $1\frac{1}{4}$ — $2\frac{1}{5}$ lines.
 - b. Wings without bands.
 - * Margins of front segments of abdomen reddish in the female; abdomen of male black, or nearly so; legs red; hind femora brown. - - - - - 42. *cingulator*, $1\frac{2}{3}$ — $2\frac{1}{3}$ lines.
 - ** Apex of 1st segment, 2nd and 3rd red, the latter with a brown mark at the sides; orbits of eyes and legs red (female).
44. *aberrans*, $1\frac{1}{3}$ line.

We have already remarked on the unsatisfactory state of this genus; as justly observed by Mr. Marshall it appears to be merely "a receptacle for all species (of Cryptides), however dissimilar, which have an imperfect areolet" (Ent. Ann., 1874, p. 123). Gravenhorst described fifty-seven species under this genus in his 'Ichneumonologia Europæa,' but only ten in both sexes; Taschenberg described about the same number, several of which are new, still only fourteen in both sexes; Ratzeburg describes a few more; and, with a few other scattered notices and descriptions, this appears to be all that has been done with the genus. It is one, no doubt, very rich in species as it stands, and much in want of careful revision. Foerster, in his 'Synopsis,' split this genus into seventy-two other elaborate genera, but as he has given no types of these, or described the species included in them, they are but of little assistance, the number of his genera being about equal to the number of described European

species. Marshall's Catalogue includes forty-four species, to which *H. biannulatus*, Gr., has since been added (Ent. Ann., 1874, p. 142). Mr. Parfitt has described three new species from Britain (Ent. Mo. Mag. xviii. pp. 79, 88, 184, 272); and the descriptions of nine other species will be found in Trans. Ent. Soc. Lond., 1883, pp. 142-152. Of these *H. inustus*, Gr., is omitted, as it is almost impossible to identify the species with any certainty from Gravenhorst's short description,—it was not in the Gravenhorstian collection, or Taschenberg would have mentioned it,—which probably refers to the male of some *Pezomachus*. *H. formosus*, Desv., is omitted, as a probable synonym of *H. fragilis*, Gr., the only distinctive character appearing to be the shorter aculeus in the former species. From a long series of captured and bred specimens (from nests of *Agelena brunnea*) this species is seen to be very variable in this and many other respects, and it does not appear improbable that *H. imbecillus* is the male; the females of *H. decipiens*, *gyrini* and *persector* have a marked general resemblance to these two varieties or species. Gravenhorst's *H. melanarius* appears to include the males of both *H. vicinus* and *H. castaneus*. Mr. Parfitt's *H. litoreus* appears to include two distinct species, both males, of which the description is not satisfactory.

Independently of the imperfect areolet the species of *Hemiteles* may generally be distinguished by having the complete metathoracic areæ of *Phygadeuon*, with the slender legs and antennæ of *Cryptus*. There are, however, exceptions to this in *H. crassicornis* and *H. mixtus* having the thickened antennæ of a *Phygadeuon*. Ratzeburg's genus *Hemimachus* was split off from *Hemiteles*, to include those males which have the metathoracic areæ very imperfect or entirely absent; and as they are now well known to be merely the winged males of *Pezomachus*, really the genus has no right to a separate existence. For convenience sake, however, we retain the name in these papers for the known males of *Pezomachus*; so if a male should not be found in the *Hemiteles* tables, it will be advisable to seek it in *Hemimachus*. Much requires clearing up in the economy of this group before the species can be conveniently arranged.

Hemiteles fulvipes is well figured by Ratzeburg (Die. Ichn., i., pl. vii., fig. 6), which is copied with the bad figure of another type into Vollenhoven's 'Schetsen' (pt. i., pl. i., fig. 20). *H. melanarius*

is figured by Curtis ('Farm Insects,' woodcut 15,-6); and there is a figure of *H. formosus* (*fragilis*) in Blackwall's 'History of Spiders' (plate xii., figs. B B).

The species of *Hemiteles* appear to be very varied in their parasitism, many seem to be almost polyphagous; compare especially the various hosts from which *H. areator* has been bred. Many species are known to be certainly hyper-parasitic, and Brischke has recorded that the female *H. fulvipes* (= *socialis*, Ratz.) lays its eggs in the *Microgaster* cocoons (Deutsche, Ent. Zeit., xxi. 287). This is not always the case, as the *Argynnis* pupa, from which *H. melanarius* was bred by Mr. Bignell, was filled with eighteen honeycomb-like, thin, brown cocoons of the *Hemiteles*, distinctly showing it to be a direct parasite.

The following table of hosts will be found to include insects of five orders, and several species are commonly parasitic in the egg-bags of spiders.

- | | | |
|----------------------------|------|---|
| 2. furcatus, <i>Tasch.</i> | from | <i>Dianthœcia cucubali</i> ; Bignell. <i>Chrysoclista schrankella</i> , Fitch Coll. <i>Gracillaria phasianipennella</i> ; Threlfall, Fletcher. <i>Laverna epilobiella</i> (? ex <i>Ascogaster</i> cocoon); Fitch. <i>L. decorella</i> ; Marshall. <i>Apanteles</i> cocoons ex <i>Zygæna filipendulæ</i> ; Bignell. |
| 5. imbecillus, <i>Gr.</i> | „ | <i>Fumea intermediella</i> , Brd. (= <i>nitidella</i> , Hof.)*; Siebold. <i>Apanteles glomeratus</i> ex <i>Pieris brassicæ</i> ; Bridgman. <i>Rhodites eglanteriæ</i> ; Taschenberg, Reinhard. |
| 7. necator, <i>Gr.</i> | „ | <i>Limacodes asellus</i> ; Kirchner's Cat. <i>Penthiua cynosbana</i> or <i>Spilonota ocellana</i> ; (Brischke) Ratzeburg. |
| 11. oxyphimus, <i>Gr.</i> | „ | <i>Cymatophora ocularis</i> ; Marshall. <i>Cynips kollari</i> galls; Billups. <i>Anobium</i> infested oak-bark; (Wissmann) Ratz. Dug out of old post, in which were both coleopterous and hymenopterous larvæ; Parfitt. |
| 13. similis, <i>Gr.</i> | „ | <i>Pardia tripunctana</i> ; Giraud. <i>Psyche calvella</i> ; Siebold. <i>Coleophora hemerobiella</i> ; (Goureaux) Dours' Cat. <i>Lithocolletis spinicolella</i> ; Elisha. <i>Microgaster</i> ; (Bouché) Ratz. <i>Microgaster</i> ex <i>Lasiocampa pini</i> *; Brischke. <i>Cynips kollari</i> galls; Billups. <i>Epeira diadema</i> ; Gir. Spider's nest; Bridgman. |
| 14. fulvipes, <i>Gr.</i> | „ | various <i>Microgaster</i> cocoons; generally. Hyper-parasitic on <i>Pieris brassicæ</i> , <i>P. napi</i> , <i>Vanessa urtiæ</i> ; Brischke. <i>Vanessa atalanta</i> ; Bridgman. <i>Zygæna trifolii</i> , <i>Euchelia jacobææ</i> ; Brischke. <i>Liparis dispar</i> ; Ratz., Gir., |

- Brischke. *Lasiocampa pini**; Ratz., Brischke. *Clostera anastomosis**; Gir. *Diloba cæruleocephala*; Brischke. *Plusia chrysitis*; Perkins. *P. gamma*; Brischke. *Apanteles glomeratus*; Marshall, Vollenhoven, Fitch. *A. congestus*; Taschenberg?, Reinhard, Fitch. *A. spurius* ex *Hadena oleracea*; F. Löw. *Selandria pusilla*; Brischke. Spider's eggs; (Brischke) Ratz.
- socialis, Ratz. „ *Microgaster* ex *Pieris brassicæ*; (Nördlinger Ratz., Boie, Brischke. *Apanteles octonarius* ex *Lithosia quadra*; Ratz.
16. decipiens, Gr. „ *Lipara lucens*; Brischke.
17. formosus, Desv. „ *Agelena brunnea*; Smith, Bridgman, Bignell. *Emphytus cinctus*; Wilson [? error].
20. vicinus, Gr. „ *Pieris brassicæ*; Kawall, Drewsen, Gir., Kaltenbach Coll. *Vanessa c-album*; Holmgren. *Coleophora Giraudi*; Gir.
23. tristator, Gr. „ *Pieris brassicæ*; Brischke. *Fumea intermediella**; Siebold. *Solenobia triquetrella*; Hofmann. Eggs of *Epeira diademata*; Brischke.
24. limbatus, Gr. „ *Chrysopa* sp.; Brischke.
25. conformis, Gr. var. „ Hyperparasitic on *Diloba cæruleocephala*, *Acronycta psi*, *Botys verticalis*; Brischke.
26. bicolorinus, Gr. „ *Bombyx quercus*; Tasch. *B. neustria*; Gr. *Fumea intermediella**; Voll. *Scythropia cratægella*; *Coleophora anatipennella*; Tasch. *Microgaster* ex *Liparis dispar*; Gir. *Cynips kollari* galls; Billups.
28. æstivalis, Gr. „ *Chrysopa perla*; Gir. *Chrysopa* sp.; Brischke. *Microgaster* ex *Chrysopa perla*; Ratz.
- var. modestus, Gr. „ *Heliodines Ræsellæ*; Heeger. *Anobium domesticum*; (Wissmann) Ratz. *Pissodes notatus*; (Reissig) Ratz. *Scolytus destructor*; (Radzay) Ratz.
29. areator, Panz. „ *Orgyia pudibunda*; (Nördlinger) Ratz. *Lasiocampa pini**; Ratz. *Dicranura furcula*; Tasch. *Tortrix viridana*; Ratz. Tortricid; Brischke. *Psyche calvella*, *Fumea intermediella**; Siebold. *F. affinis*; Hofmann. *Psyche* sp.?; Ratz. *Talæporia pseudobombycella*; Carrington, Fitch. *Cerostoma costella*; Voll. *Hyponomeuta padella*; (Brischke) Ratz. *H. malinella**; Brischke. *H. evonymella* (cognatella); Ratz. *Gelechia albipalpella*; Marshall. *G. vulgella*; Elisha. *Coleophora currucipennella*; (Goureau) Dours' Cat. *C. nigricella*; Gir. *C. anatipennella*, *C. therinella*; Marshall. *Lithocolletis* sp.; Brischke. *Trichiosoma betulæ*, *Lophyrus pini* or *similis*; Ratz., Brischke. *Fenusia*

- pumilia; Brischke. *Cryptus incubitor* [cim-bicis] ex *Trichiosoma betulæ*; Voll., Bridgman, Bignell. *Phygadeuon basizonus* ex *Lophyrus pini*; Ratz. *Macrocentrus thoracicus* ex *Phycis betulella*; Fitch. *Microgaster* ex *Lasiocampa pini*; Ratz. *Microgaster* ex *Pieris brassicæ*; Gir. *Cynips kollari* galls; Weston. *Andricus terminalis* galls; Walker. *Hedobia imperialis* and other xylophagous oak-feeders; (Nördlinger) Ratz. *Anthrenus* sp.; Westwood. *Cecidomyia rosaria*, *Chrysopa* sp.; Brischke.
30. *melanarius, Gr.* „ *Pieris brassicæ*; Drewsen, Tasch. *P. napi*; Curt. *Argynnis paphia*; Bignell. *Vanessa c-album*; Holmgren. *Psyche* sp.; (v. Siebold) Ratz. *Solenobia triquetrella*; Siebold. *Pissodes notatus*, *Hylurgus piniperda*; (Reissig) Ratz. Spider's eggs [female of *Pez. agilis*]; (Goureau) Dours' Cat.
33. *castaneus, Tasch.* „ [? *Exæretia allisella*; Sang]. *Trichiosoma betulæ*; Bignell. *Clavellaria amerinæ*; Brischke. *Lophyrus pini* or *similis*, *Chrysopa* sp.; Brischke.
36. *fragilis, Gr.* „ *Emphytus cinctus*; Wilson. Spider's nests; Brischke.
37. *monozonius, Gr.* „ *Perilitus unicolor*; Hartig.
39. *tenerrinus, Gr.* „ *Microgaster* cocoons; Parfitt. *Agelena brunnea* nests; (Goureau) Gir.
42. *cingulator, Gr.* „ Hyperparasitic on *Cucullia argentea**; Brischke. *Tinea biselliella*; Boie. *Coleophora nigricella*; (De Graaf) Voll. *Chrysocorys festaliella*; Barrett.
- palpator, *Gr.* „ *Pieris brassicæ*; Tasch. *Scoparia cratægella*; (Snellen) Voll. *Fumea intermediella**; Voll. *Clavellaria amerinæ*; Brischke. Cylindrical black and white spotted cocoon [? *Limneria* sp.]; Tasch. Egg-bag of spider; Reinhard, Dours.
- gyrini, *Parfitt* „ *Gyrinus natator*; Parfitt, Hellins, Bignell.

BRITISH VERSUS EUROPEAN LEPIDOPTERA.

BY PRIORS MARSTON.

A PAPER which appeared in 'Land and Water' for March 10th, entitled "British *versus* European Lepidoptera — what is a British Subject?" by M. A. Wailly, calls, I think, for some notice from British entomologists. It is surprising that this paper did not appear in one or other of the periodicals especially

devoted to the subject of Entomology, unless, indeed, it appeared in 'Land and Water' only after being rejected by these magazines. That it may have been so rejected seems likely enough, for a more illogical paper I have rarely read, displaying both an ignorance of British Lepidoptera and of English literature on the subject which is simply depressing. M. Wailly may "already see a simile," as he anticipated; but it is at no cracking "of one of his jokes," but rather in pity. M. Wailly informs us that, besides exotic Lepidoptera, "I also rear European species whenever I receive ova or pupæ of such that I do not know, and I know but few of them." This is a reasonable thirst for knowledge. But he tells us that "on October 27th, 1879, he received 500 ova of *Ennomos autumnaria* (= *alniaria*)"; this strikes one as an enormous number for one person to receive, if it is only a reasonable thirst for knowledge he desires to slake—a dozen eggs would suffice. "The ova hatched from May 10th, 1880, but I kept no notes on the rearing of the larvæ, which were of little interest to me." Then there was not much thirst after all; yet why again in 1881 did M. Wailly rear them "for the second time" and obtain "a large quantity of fertile ova"? Surely our philosophic entomologist takes a deal of trouble about a species of "little interest" to him. Having introduced a species which was of extreme rarity here, M. Wailly not only attempts to defend this procedure, but attacks those entomologists who limit their studies to British Lepidoptera. As regards defence, I will remark, "*qui s'excuse s'accuse*"; the attack, however, requires some special notice.

M. Wailly delivers himself of this extraordinary remark:—"He who imports and rears species which he cannot find or obtain in his own country is a creator, as it were; he who ransacks every nook and corner to hunt down rare species is a destroyer"; and he asks, "which of the two renders the greatest service to entomological science?" He continues, "It is unnecessary to state why entomologists who sell pure British species object to the introduction of continental species for an obvious reason." The reason may be obvious enough, but surely not more obvious than M. Wailly's reason for upholding the importation of continental species—and, mind, especially the importation of those species the British examples of which command a high price. I will ask M. Wailly, did he not import

the 500 ova of *E. autumnaria* for sale—quite apart from any desire for knowledge? and why, if not for mere pounds, shillings, and pence, are the importations from abroad almost limited to species which as British are of extreme rarity? When viewed by this light your importer does not figure favourably as one who does a great “service to entomological science.” The man “who ransacks every nook and corner to hunt down” (which does not mean exterminate) “rare species” does render great service to entomological science, by not only discovering species new to the country he may be in, but also species absolutely new to science. This has been done over and over again, even by those British entomologists on whom M. Wailly is so hard. It surely is unnecessary to point out the aid to science which a more or less definite knowledge of the purely British Lepidoptera renders. It never seems to strike M. Wailly that a man can study foreign Lepidoptera and yet keep a collection of purely British specimens. What is protested against—and simply on the score of morality, and quite independent of any entomological love—is, that dealers should import almost entirely foreign specimens—ova, larvæ, pupæ, or imagoes—of species which may be fraudulently used. Does M. Wailly think that the demand for his ova of *E. autumnaria* would have been so great if they had been of a species which had never occurred in this country, and which was never likely to do so?

M. Wailly then goes on to discuss, “What is a British subject?” Not, however, it would appear with a view to answer his question, but rather to throw as much doubt as he can upon species some of which, at least, are British. As regards *Vanessa antiopa*, M. Wailly states that, so far as he knows, it has only occurred singly. It may interest him to know that two gentlemen saw a great many one morning flying round poplars near Cambridge; and six or seven or more specimens have been taken by one person, and that on more than one occasion. M. Wailly seems to infer that this species is not able to “be in existence during the winter” here. It may interest him to know that hybernated specimens have been taken in this country. M. Wailly appears to think that *A. atropos* is not “a British subject,” as it appeared two or three years ago so abundantly on the Southern Coast of England, and has not devastated the potato-fields. He asks, “What has become of those thousands of *Atropos* found in Sussex and Kent?” I must confess my

ignorance of the fact—and a fact I suppose it is if M. Wailly states it—that thousands of *Atropos* were so found. Surely M. Wailly does not base an argument adverse to *Atropos* being “a British subject” simply because it is much more numerous in some seasons than in others; if so, we should be poorly off indeed for indigenous species. *Polyommatus phlæas* some few years ago had become so scarce that I heard it hinted that its extinction would follow that of *P. dispar*. *V. polychloros*, after being very common for many years, became very scarce, and is again common. Both *Catocala sponsa* and *C. promissa* for some years prior to 1871 had been very scarce. *Lithosia quadra* larvæ many years ago appeared in countless numbers in the New Forest, with a proportionate number of imagos, yet in 1871 and a few years prior but very few were taken—now they are again common. In 1871 again *Dicycla oo* was exceedingly common, but has been scarce since then; and many other instances might be quoted. Yet few, if any, I think, would doubt that they are as purely indigenous British species as any can well be. M. Wailly refers to *Sphinx convolvuli*, *Deilephila livornica*, *Chærocampa nerii*, and *C. celerio* as other species of the Sphingidæ which cannot be considered British. *S. convolvuli* larvæ have year after year been found by an entomologist, feeding on bindweed in an old gravel-pit. *D. livornica*, I am informed, can be taken regularly on the South Devon Coast. *C. nerii* is but an occasional visitor. *C. celerio* may be so also, but larvæ of it have been found in this country. Will M. Wailly name the “several species of the finest British Lepidoptera” which have entirely disappeared, and those “others which at no very distant period may also become extinct”?

I will not specially notice M. Wailly's quotations from W. J. Coleman's book on British butterflies, as the book cannot be considered as carrying any weight as a standard work.

M. Wailly states, as regards *Papilio machaon*, that “it is confined within comparatively very narrow limits—the fens of Cambridgeshire; I do not know that it is found anywhere else.” It seems almost incredible that anyone taking an interest at all in British Lepidoptera should reside here for even six months and not know that *P. machaon* has a wide range in the Norfolk fens.

As regards extinction of species of Lepidoptera. Can M. Wailly point to a single species which has become extinct here solely from the efforts to those collectors who ransack every nook and corner for rare species?

It would, I think, have conduced to a fair valuation of M. Wailly's article by the readers of 'Land and Water' if he had let it be at once known that he imported continental species for sale, and not endeavoured to figure solely as the sarcastic philosopher.

Byfield, Northamptonshire.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

PIERIS DAPLIDICE IN CAMBRIDGESHIRE.—I was very pleased to read, in the 'Entomologist' of February last, of the capture of *Pieris daplidice* by Mr. Baker; and seeing that it was captured near Newmarket, I have thought it would be interesting to some of the Cambridgeshire collectors to know that in 1859 I met with three of this interesting insect, one at Bottisham Rise (about Aug. 11th), the second near the 'Prince Albert,' and the third at Quy Church, on September 12th. At that time I always walked down to Newmarket, and was generally very well repaid for the journey, as I came across many good things; and no doubt if other collectors would work the same district we should hear of more *P. daplidice* being captured. During the same season *Colias edusa* and *C. hyale* were common. On the same road I found four larvæ of *Deilephila galii*. *Chærocampa porcellus* and *C. elpenor* were plentiful, and many other things that occur on chalky districts, and now and then some of the fen insects put in an appearance. As the distance is very short, I have no doubt it would pay some of our young entomologists to stay a few days at Bottisham, as they might spend one day at Newmarket Ditch and the next in the Fen, thus varying their collecting. Possibly Reach would be better than Bottisham, as it is only four miles off Wicken and joins Newmarket Ditch.—H. JOBSON; 3, Clarendon Road, Walthamstow.

ARGYNNIS DIA AT EPPING.—About a month ago I saw a fine specimen of the above insect, in the collection of a gentleman living at Shepherd's Bush, which was recently advertised for sale. He informed me that he had taken it at Epping some years ago, and he drew my attention particularly to the under-side. The specimen was in excellent preservation, not at all rubbed, and

smaller than *A. selene*.—P. J. RENDALL; 20, Ladbroke Square, London, W., Feb. 20, 1883.

[We insert the above statement of our correspondent, but decline to give an opinion upon the probability of *A. dia* occurring in Epping Forest, not having seen the specimen.—J. T. C.]

NOTES ON THE REARING OF CHELONIA PLANTAGINIS.—Thinking that it may possibly interest some of the readers of the 'Entomologist,' I have ventured to give a brief account of my experience in the rearing of the above mentioned insect, so that if any should have a desire to breed it they may have the benefit of my notes on the subject. In May of last year I obtained a female of *C. plantaginis*, which laid a brood of about three hundred eggs. They all hatched in about twenty days, and I supplied them with their proper food, *viz.*, the narrow-leaf plantain. I kept them on this food for about three weeks, and noticed that during that time about a third of the number made more rapid strides in growth than the others. At the suggestion of Mr. Wellman I now substituted lettuce for the plantain, and placed the breeding-cage in the sun. They all continued to thrive, but the one-third above mentioned grew rapidly and pupated about the last week in August, and emerged, very fine and perfect specimens, during October. The remainder continued feeding until the third week in November, when I placed them in a cold dry cellar. During the winter I supplied them weekly with a small quantity of groundsel, upon which they occasionally fed. On the 24th of January they began to feed freely on groundsel, upon which I kept them until the middle of March, when lettuce becoming again procurable I re-transferred them. Upon this diet they made rapid strides, and finally pupated during the first week in April. I may mention that during the winter I only lost about one-third of the number, and can strongly recommend the use of lettuce, not only as a food-plant for the above-mentioned species, but also for *C. villica*, which I have reared upon it with greater success than upon chickweed, its ordinary food.—M. RICKETTS; Bouverie House, Folkestone, April 20, 1883.

CYMATOPHORA FLAVICORNIS.—I had this winter some pupæ of *C. flavicornis*, and as several of the insects did not emerge I opened a few of the pupæ, and in four of them found that the

head of the moth was towards the tail of the pupa-case; they had split the case in the usual manner, but had been unable to emerge. What is the explanation of this anomaly?—W. R. BUCKELL; Romsey, Hampshire, April 6, 1883.

DASYCAMPA RUBIGINEA NEAR SALISBURY.—I have much pleasure in stating that I took the above insect at sugar, on the 31st of March last. The specimen is very fair for a hybernated one.—H. POWYS GREENWOOD; Harnham Cliff, Salisbury, April 23rd, 1883.

ERASTRIA VENUSTULA.—I observe in Mr. Wright's article, last month (Entom. xvi. 81), that he indicates *Tormentilla reptans* as a food-plant for the above-named species. Although I have frequently searched carefully the leaves, and particularly the yellow blossoms of that plant at the proper time, viz., during July and August, I have failed to find any trace of the larva, neither have I seen any evidence of its feeding. Perhaps your correspondent can inform us authoritatively whether he has ever found the larva of *E. venustula* feeding on the plant named, or may be some of your correspondents who have studied the life-history of this beautiful little Noctua may be able to throw some light upon it; for though it is the food-plant named in most text-books, yet I cannot help thinking that although it may occasionally feed upon it, yet it does not absolutely confine its gastronomical powers to it.—WALTER SCOTT; Colonial Office, S.W., April 24, 1883.

BREPHOS NOTHA IN THE ONGAR PARK WOODS.—As this pretty and interesting species is, I believe, considered rather a "good thing" among entomologists of the London district, it may interest that section of your readers to hear that I have lately taken it in some numbers in the Ongar Park Woods. Its time of appearance in this locality is the first or second week in April, according to the season; but, in any case, it is not seen on the wing until its congener, *B. parthenias*, is almost, if not quite, over. One would infer from our standard authorities that both species were out simultaneously or nearly so; such, however, I have not found to be the case. A sunny day, and a long pole on which to fix one's net, are essential to the capture of *B. notha*, which, so far as my experience goes, is even more fond of keeping up aloft than its cousin *B. parthenias*. With the aid,

however, of a good ash-pole one can get on even terms with them, as they are easy enough to capture when within reach. They frequently alight on the topmost sprays of the underwood, and folding their wings when at rest, are in that position almost invisible. I found it a good plan to walk along the wood ridings, tapping the highest branches within reach; they fly at once, when disturbed, and can then be seen and perhaps caught. The female seems much rarer than the male; probably, however, this is owing to their more sluggish habits. After the series of diminutive bred specimens one sees so commonly in collections, I was surprised at the size of the species when fed in the open. Mr. English, of Epping, informs me that years ago he took the insect in the same locality in plenty, but it gradually became scarcer, and he had not observed it at all of late years. I was therefore all the more pleased at "turning it up" again.—HAROLD CONQUEST; Chingford, April 23, 1883.

MIXODIA RUBIGINOSANA, AND OTHER LOCAL MICRO-LEPIDOPTERA IN NORFOLK DURING 1882.—On the 16th of June last year, amongst other insects my brother brought home from a day's collecting were five specimens of *Mixodia rubiginosana*. They were taken in extensive fir-woods, about seven miles from King's Lynn. The species being so decidedly northern, and therefore one unlooked for in this county, I have instituted enquiries as to the source from whence the Scotch fir-trees of these woods were obtained, and find that they were brought from Scotland some twenty or thirty years ago; therefore it would appear that the species was introduced with the trees. In the same woods and on the same day, two fine specimens of *Cryptoblabes bistrigella*, were captured; and on very wet ground, among reeds, about half a mile from the woods, a single *Cosmoptyx lienigiella* was boxed. During the next month (July), whilst collecting *Strathmopoda pedella*, by beating some old alders, four splendid specimens of the brilliant little *Bohemannia quadrimaculella* were dislodged and secured. Earlier in the season (May) *Tinagma resplendella* also occurred in this district. In conclusion, let me add, that not being sure that I had correctly identified some of these species, they were sent to Mr. C. G. Barrett, who has kindly named them for me.—EDWARD A. ATMORE; 8, Union Street, King's Lynn, Norfolk, April 19, 1883.

SOLENOBIA INCONSPICUELLA AT CLAPHAM.—On the 31st March I took a male of this species from some palings on Clapham Common. A careful search on the trunks of some old elms produced the cases in considerable abundance, a few slowly crawling upwards with their burden; the majority, however, had become fixtures; there were also empty cases of this and the last season.—GEORGE COVERDALE; 24, Fleming Road, Lorrimore Square, S.E., April 2, 1883.

SPRING NOTES AND HINTS ON BREEDING.—The prospect of an early season has been completely changed by the cold weather which commenced in the first week in March. The unusually mild December, January, and February had brought out several of our spring Lepidoptera, notably *Endromis versicolor*, three very fine males having emerged in my breeding-cages during February, fully a month before their usual time, and this with the cages out of doors. The extremely cold weather of March, however, entirely stopped emergence, and a male and female moth hung in an almost lifeless condition for three weeks, without once changing their position until the 31st of the month. A mild change occurring they commenced to move sluggishly, but appeared too weak to copulate; so were killed. The warmer weather that prevailed during the early part of this month soon showed its effect on pupæ. On the 1st of the month a beautiful female *Petasia nubeculosa* emerged, followed by a second the next day; and to this date, April 17th, six males and seven very grand females of *E. versicolor*. These were all from two-years' old pupæ, and both species I obtained from Mr. McArthur, from Rannoch, in 1881. From thirty-three fertile eggs of *E. versicolor* I have now bred twenty-one moths, eight in 1882, of which seven were males and one female, and thirteen up to date this spring—six males and seven females. From seven fertile eggs of *P. nubeculosa*, one male, bred 1882, and two females this month; and I quite hope to see others from the four remaining pupæ next season. *P. nubeculosa* has the credit of being difficult to breed, so that I congratulate myself on my success with this rare species. I may remark, *en passant*, that the description of the larva, as given in Newman's 'British Moths,' is evidently described from life, and is very correct. I compared it with the larva when full fed, and it agreed perfectly. From the one female *E. versicolor*, bred

last year, I obtained a batch of eggs, most of which I distributed to various friends, keeping twenty myself. These fed up well until nearly full fed, when they were attacked with diarrhœa, so fatal to larva; the frass became moist, and their beautiful green colour soiled and dirty; they were evidently very sick, and I quite expected to lose them all, so thought I would try a strong remedy to save them. Each larva was held under a tap of cold water, and gently brushed with a camel-hair pencil, so as to thoroughly cleanse them, and then rinsed in the stream of dripping water; they were then placed on clean, dry food; and the result was a perfect success. Every larva fully recovered, fed up well, and went to healthy pupæ, some of which I have bred this month, but most will probably lie over till next season. This cold douche bath is evidently worth trying for larvæ attacked with diarrhœa. I had once before successfully used it in a milder form, *i. e.*, simply brushing the larva with cold water, on a small brood of *Chesias obliquaria*: the moistened frass in their case had dried on the anal flap, and so completely blocked all outlet; but cleaning was a perfect cure, and I bred every one, although five laggards remained two years in pupa. At any rate I can confidently recommend the douche bath for affected larvæ.—W. H. TUGWELL; Greenwich, April 17, 1883.

SALLOWS AT LOUGHTON.—Having read the able article on "Sallows" by the Editor of the 'Entomologist' (Entom. xvi. 85), I thought, as I had never before worked them, I would go and see what success awaited me. Selecting a fine evening, *viz.*, April 9th, and provided with beating-tray and lamps, I started off to Loughton, hoping to meet again my old friends of last year, *viz.*, the Noctuæ. The spot which I selected was a slope with southern aspect, well wooded with oak and a good sprinkling of sallow. I waited impatiently for the last rays of the setting sun, anxious to verify Mr. Carrington's article above mentioned. I had always been under the impression that an easterly wind was unfavourable for collecting, and was much surprised to find, that although one was blowing at the time, the moths were flying gaily against it. I was pleased to observe *Hybernina progemmaria*, *Anticlea badiata*, *Larentia multistrigaria*, *Tortricodis hyemana*, and *Diurnea fagella*, although not in large numbers. But it was for the Noctuæ I had principally come, and darkness had hardly

set in when I opened my tray, and placing it under a fine male plant gave it a sharp rap, and looking anxiously for results was pleased to find *Taniocampa munda*, *T. instabilis*, and a number of *Cerastis vaccinii* and *Scopelosoma satellitia*, the two latter looking rather the worse for their long sleep. Another beat brought me a similar lot, with the addition of *T. stabilis*; and in subsequent beats I obtained *T. gothica*, *T. gracilis*, *T. cruda*, and *Xylocampa lithoriza*. These made up the sum total of my first evening at "sallowing," which I hope will not be the last, as I have no hesitation in stating that it was one of the most pleasant evenings which I have as yet spent, notwithstanding the numerous sallies of the friend who accompanied me, about the absence of *Dasycampa rubiginea*. I trust next year to be able to testify that the sallows are as tempting to the other good things mentioned by Mr. Carrington, as they were to those insects which I have enumerated. I may mention that I have just bred a nice series of *Melanippe hastata* from ova obtained last season.—H. JOBSON, jun.; 3, Clarendon Road, Walthamstow, April 20, 1883.

COLLECTING IN NATAL.—The number of species of Natal butterflies taken by me now amounts to the respectable number of 203; and this for the rather limited Rhopalocerous fauna that South Africa offers is a rather large proportion. This number includes (with two or three exceptions) all the coast butterflies known. Up country I have done but little collecting; the climate there, from its elevation, becomes much colder, and the tropical species entirely disappear. At Maritzburg, 60 miles inland, I have done a little collecting, my best capture being *Durbania amakosa*, which I met with on the Town Bush Hill flying over the bare rock. On Feb. 10th, 1883, business took me to Durban, and in the afternoon I strolled into the woods above the town for an hour's collecting. Here for the first time I saw the singularly marked *Aterica meleagris* alive; but the specimen was so active that it entirely eluded pursuit. The next day (Feb. 11th) the thermometer stood at 109° in the shade, being far too hot to swelter in an ill-ventilated church listening to a drowsy sermon from a sixth-rate preacher, so I went for a quiet stroll through the Verulam Cemetery. Whilst watching the gambols of the Varanes butterflies, who were merrily chasing each other through and around the cypress trees, suddenly a dark-looking insect

came with a jerk and settled on a dead cypress branch close beside me. I at once recognised it by its "snout" to be *Libythea labdacæ*, an insect I had assiduously sought after for four years past. It obligingly waited whilst I drew a little net from my pocket and adjusted it, and upon taking the prize I found I had secured a lovely perfect female. How many score of *Crenis Natalensis* and *boisduvalii* have I netted during the past four years in the vain hope that this species would be amongst them! I am the more proud of my capture since it is the only specimen taken in Natal since 1878, in which year half-a-dozen individuals were secured. The wooded district in the neighbourhood of Verulam is stunted, and not higher than the under-growth of an average English copse; but there is one place where the trees are high, and form a natural avenue. This is a favourite spot for certain high-flying butterflies, especially *Papilio leonidas*, *Diadema Missippus*, *Anthedon*, and *Dubea*, *Charaxes brutus*, *saturnus*, and *cethæron*. Last Saturday (Feb. 17th) I was in this avenue, and whilst watching these butterflies as they circled and coquetted in merry groups, now chasing each other through the sunlit branches and anon resting on some dead and dry twig, I noticed among a group of the genus *Diadema* a fine specimen that was new to me. Having a long-handled net I at once secured it, and found my prize to be a splendid female expanding over four inches, and of a species distinct from *Anthedon*, *Mima* or *Missippus*. Considerably exercised in my mind, I returned home, and after luncheon returned again to the avenue, where fortune again awaited me, for I captured a male specimen of the same species as I had secured in the morning. What it is I am not prepared to say, but on my return I intend to have my enormous collection of Lepidoptera and Coleoptera thoroughly overhauled, and the new species made known to Science.—A. J. SPILLER; Verulam, Natal, Feb. 19, 1883.

EMUS HIRTUS NEAR REDRUTH.—I took a specimen of the above insect near Lizard Point, in the autumn of 1881, but was not sure of its identity. However, having to go to London this winter I took it up with me, and at the British Museum they assured me it was a true specimen of *E. hirtus* and a great rarity.—A. HAMILTON JENKIN; Trewirgie, Redruth, Cornwall, April 17, 1883.

CERATAPHIS LATANIÆ, *Boisduval*, ON LEAVES OF ORCHIDS AT CHICHESTER.—On February 14th Mr. Gatehouse, of this town, sent me some plant-lice, which he found infesting the leaves of orchids in his Conservatory. These I forwarded to M. Richter, of Montpellier, for identification. He informs me that they are the *Cerataphis lataniæ* of Boisduval. He has furnished me with three microscopical preparations of those transmitted, *viz.*, the mother larva, *Pseudogyna fundatrix*; the agamous form, *P. gemmans*; and the larva of *P. migrans*; and has most generously presented me with the winged emigrant, *Pseudogyna migrans*. As Buckton does not mention this insect in his 'British Aphides,' published by the Ray Society, this record of its discovery may prove acceptable to those interested in the subject. I shall, all being well, keep a strict watch for the winged emigrant in May, and for the still rarer pupiferous form in August. I may add that I have sent specimens to Mr. Enoch, so well known for his exquisite preparations of insects without pressure, to be preserved in this manner, in order that the beautiful pearly-white fringe of the adult may be seen to the best advantage in contrast with the brown colour of the body.—JOSEPH ANDERSON, JUN.; Chichester.

OBITUARY.

PHILIP CHRISTOLPH ZELLER.—Lepidopterists will read with sorrow of the death of this well-known Entomologist, whose name during the last generation has been a household word among the readers of this magazine. He has long been the authority to whom many Englishmen have referred in matters of difficulty, especially in reference to Micro-lepidoptera. Professor Zeller was born on the 9th April, 1808, at Steinheim, and died at Grünhof, near Stettin, 27th March, 1883, unexpectedly, of heart disease. Among other literary work the subject of this memoir is best known to our readers as a joint editor with Mr. Stainton in the 'Natural History of the Tineina,' which unfortunately has ceased latterly to appear; and we fear through Prof. Zeller's death the chances of the continuance of that really classical work are almost extinguished.—J. T. C.

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ABNORMAL LARVA OF *MELANIPPE MONTANATA*.



Abnormal larva of *Melanippe montanata*.

THE curious larva of *Melanippe montanata* figured above was exhibited by me at the Entomological réunion at the Royal Aquarium, on March 5th last. It has the antennæ and prolegs of the perfect insect fully developed. This monstrosity was one of a brood of a dozen larvæ which I reared from ova. These eggs hatched in August, 1882, and I noticed nothing particular about the young larvæ until the end of November, when I observed that one was considerably larger, and was evidently more forward and thriving than the others. I watched it carefully, and found it almost continuously feeding, and keeping steadily to its food (*Primula vulgaris*), with which the larvæ were liberally supplied during the past mild winter. On February 15th I was astonished to find that this forward individual had developed the antennæ of the imago, but without in any other way altering its larval appearance. For a space of two or three days the antennæ were beautifully pectinated, and then the prolegs of the imago became perfect, being, with the abnormal antennæ, of the appearance of uncoloured gelatine. Both antennæ and legs then gradually shrank and dried until the 20th; and as the larva showed signs of dying I thought it better to preserve it while possible. All the larvæ in this brood were reared in a cold room, with the windows generally open.

E. H. JONES.

INTRODUCTORY PAPERS ON LEPIDOPTERA.

BY W. F. KIRBY.

(Assistant in the Zoological Department, British Museum.)

No. XIX. NYMPHALIDÆ—NYMPHALINÆ (*concluded*).

THE East Indian genus *Euthalia* is very extensive, and includes species of considerable size (from 2 to 5 inches in expanse). They are generally brown or olive-green above, with paler markings, several species being banded with greenish white or buff, in the same manner as *Limenitis*. They are, however, much more robust insects, and the hind margin is more or less concave. Many are banded with white on the fore wings only, while others are marked with blood-red spots. *A. durga*, one of the largest and handsomest species, exceeds 4 inches in expanse. The wings are dull green, with a broad white band divided into oblong spots by the nervures, extending across the fore wings to the middle of the hind wings. From the middle of the fore wings to the anal angle of the hind wings runs an irregular blue suffused band outside the white one.

In the beautiful East Indian genus *Symphædra* the males are deep black, broadly bordered with a shaded blue or green band; and we find a similar arrangement of colour in the males of some of the smaller species of *Euthalia*. The females of *Symphædra* are larger than the males, and are marked with several rows of white or buff spots. *Symphædra nais*, the smallest species of the genus, is, however, differently coloured. It expands nearly 2 inches across the wings, which are of a pale red, with some rather large blackish spots on the fore wings, and a submarginal row of smaller ones.

The genus *Apatura* is too well known to detain us long. It is found in most parts of the world; and although several of the Indian and South American species are very inferior to our own *A. iris* in size and colour, yet others are suffused with much brighter blue or green. The under surface of some of the South American species is of a most brilliant silvery white.

A much commoner genus in South America, however, is *Prepona*. These are large, black, robust butterflies, 4 inches in expanse, with a broad blue band across both wings.

Another remarkable South American genus is *Aganisthos*.

A. odius is fully as large as *Prepona* in expanse, but the wings are narrower, and the fore wings are very deeply concave below the tip. It is black, with the basal third, and the whole middle of the fore wings, fulvous.

Agrias and *Smyrna* are two other handsome South American genera, allied to *Prepona*, &c., but smaller, rarely exceeding 3 inches in expanse. They are, however, stout-bodied insects, capable of powerful flight. The hind margin of the fore wings is only slightly concave; but the anal angle of the hind wings in *Smyrna* is sometimes slightly lobed. The species of *Smyrna* are of a rich tawny or fulvous, with the apex of the fore wings broadly black, and marked with three white or tawny spots.

Agrias is one of the most beautiful genera of butterflies, being of a rich black, banded or suffused with large masses of scarlet, orange-yellow, rich purple, blue, or bluish green.

The genus *Charaxes* is well represented in Asia and Africa. There is a single species (*C. jasius*) found in all the countries bordering on the Mediterranean, which is the most tropical-looking of all our European butterflies. They are large insects, usually measuring 3 or 4 inches in expanse, and are often provided with one, two, or three tails in the hind wings. Some are of a rich tawny or fulvous above, and either brown, or beautifully tessellated with red, black, white, and yellow below; others are black, with a broad yellow or whitish band across both wings; others again are black, with blue markings; and some of the largest Indian species are of a pale creamy yellow, with black borders; one of the smallest West African species (*C. eupale*) is of a very delicate green, with the borders rather darker.

The nearest ally of *Charaxes* in South America is *Megistanis*. Two handsome black species, banded above with blue or orange, and spotted with white towards the tip of the fore wings, are not uncommon. The under surface is beautifully tessellated with black on a bluish white ground, and the wings expand over 3 inches.

The genus *Anæa* includes much smaller species, averaging 2 inches in expanse, and with a short, sometimes spatulate tail on the hind wings. They are very numerous in Tropical America, and are of a brown or black colour, more or less of the surface of the wings being filled up with red or blue. *A. nessus*, Linn., one of the largest species, may also be considered the most beautiful,

the fore wings being marked with two oblique pink stripes shading into magenta, separated and bordered below by suffused stripes of the richest blue.

The species of *Hyppna* are also common Tropical American insects. They are brown, with a broad cream-coloured band on the fore wings, and the hind wings are frequently dull red in the middle. The fore wings are often pointed, the hind wings have a short spatulate tail, and both are adorned with numerous yellowish spots of a metallic lustre.

Protopgonius, the last genus of the *Nymphalinae*, contains brown and tawny species, resembling *Heliconii* in size, colour, and markings, but with broader wings. The front half of the fore wings is produced, the lower prominence almost forming a hook, and the hind wings have a short spatulate tail.

REPORT ON THE ENTOMOLOGY OF CERTAIN DISTRICTS IN ULSTER.

THIS report was contained in a paper read before the Royal Irish Academy, on the 26th February last, by Mr. W. F. De V. Kane, M.A.

News from Ireland latterly has been of such a melancholy character that it is pleasing to find that there are people who in the midst of political misery find time and opportunity to investigate the natural history of that country. Mr. Kane has brought up to the time of reading his paper so much as is known about the Lepidoptera of the eastern portion of the island, not only by investigating and collating the literature of the subject, but also by collecting in several localities which appear to have been hitherto unworked.

In noticing this record of Mr. Kane's, we think it desirable to quote somewhat liberally from it, making such remarks as may here and there seem advisable.

After remarking upon certain papers by our esteemed friends Mr. Edwin Birchall and Dr. Buchanan White, the author goes on to remark upon the limited area over which the lepidopterist has carried on his investigations. These, as Mr. Kane states, have been confined to limited districts in the counties of Dublin, Wicklow, Kerry, Westmeath, Galway, and Mayo; to these he

might have added Sligo, where our correspondent Mr. Percy Russ has unobtrusively worked for the past few seasons, and from which he has sent many curious and interesting forms of insects, generally common to our islands. The author of the paper then proceeds to say very truly that "the long reaches of sandhills and rocky shores around our coasts, luxuriant with every sort of maritime plant, and exposed to various aspects and climatic conditions, have for the most part yet to be explored. Our vast bogs and numerous lake and river margins have, strange to say, contributed a more meagre list than any one of the English fen districts." No doubt the writer is correct in his statement as to the paucity of species as yet recorded from Ireland. This may be attributed to two causes—first, that the country has been very inefficiently worked; and secondly, on account of the geographical position of the island in regard to the European continent. Lying as it does to the extreme west of the main continent, separated by the broad channel, having a humid and somewhat sunless climate, with prevalence of westerly winds blowing from the ocean, it is quite to be expected that there would exist a marked difference between the fauna of the main land of the continent, or even the adjoining islands of Great Britain. Little assistance could be expected from the blow-over theory, as such winds as could carry lepidopterous insects from the main land to Ireland would be chiefly from the east, and when strong enough would be unfavourable to the rapid flight of insects on account of the generally low temperature prevailing when these winds are prevalent.

We should not look so much to the number of species of Lepidoptera which occur in Ireland, as to the variation in colour or habits which may be observed in those taken on account of their insular habitat, and the climatic influences surrounding the locality. From a scientific point of view it is of very much more value to observe the variation of different specimens which may lead to the key to the origin of species, and no better opportunity occurs for investigation of the subject than to the workers in Entomology in Ireland. It would be most advisable to have a series for comparison of even the commonest species taken in various parts of the island, especially from the boggy portions of the centre, and the mountainous districts of the west and north-west. The great low-lying tract of land known as the Bog of

Allan should receive especial attention, inhospitable even as it is.

Mr. Kane remarks:—"The woodlands of Killarney and Powerscourt have yielded surprising results to Mr. Birchall and others; we may therefore reasonably hope for numerous fresh discoveries in like districts elsewhere in Ireland." This is a very reasonable remark, when we can enumerate on the fingers of our two hands the names of those entomologists who have seriously worked the Irish localities. The writer of the report says:—"It seems regrettable that no society exists in this university city (Dublin) which would gather together lovers of Natural History who could record their researches, and through its members diffuse throughout the country an interest in these humanising studies." It does indeed seem extraordinary that the educated people of such a large city should take so little interest in the study of Nature, when few cities possess such facilities as Dublin enjoys. Half an hour's walk from any part of the city places the student at once in the midst of some of the finest collecting grounds in the United Kingdom; while half an hour's railway ride from the city in several directions gives the entomologist choice of some of the most varied geological formations, and consequent varied flora, and hence variety in insect-life. Taking for instance Howth, with its limestone formations and the adjoining sandhills, at Sutton and Malahide. Again, the Kingstown line takes us to the entirely different formation of Bray Head, which is of granite. A trip on the South Western Railway shortly places us in the centre of collecting grounds, to all appearance as suitable to the desires of an entomologist as the fens of Norfolk and Cambridge.

The writer of the report goes on to discuss the result of mild or severe winters upon the development of insect-life; but as his views have recently appeared in these pages, we need not further refer to them. He then proceeds to deal with some of the localities in which he has collected, referring specially to Favour Royal, the seat of the Rev. J. J. Moubray, on the border of Co. Tyrone, which he describes as a stretch of woodland of some 220 acres, with a tract of 180 acres of wild land sparsely timbered with oak, birch, and alder, and now used as a deer forest. Further describing them he says:—"These thickets, invested with the glamour of a hoar antiquity, are supposed still to be

the haunt of the 'Loghrie-man' or 'Leprechaun,' whose wizened face peering out from a mossy stump is said sometimes to startle the lonely scallop cutter as he bends to his task in the gloom of the wood; and also of an unseen sprite, whose attendant footfall, stirring the dead leaves in the autumn gloaming, is wont to mock his homeward steps." Unfortunately Mr. Kane does not record the capture of these "ghosts," probably because his "nocturnal rambles were generally superintended by two stalwart members of the Royal Irish Constabulary." From this district the writer of the record states that he got a large variety of species, and some in great numbers; although in reading over the list one does not observe anything which one might not expect to find in the locality described.

Appended to the report is a long list of Lepidoptera, with remarks added to the names in some instances. These are of more or less value, but tend to show that the writer is earnestly, though somewhat single-handedly, attempting to unravel the secrets of Nature in a little-worked neighbourhood. We must certainly congratulate him upon his efforts, which only want the ripening influence of further experience to make them of real value from a scientific point of view.

JOHN T. CARRINGTON.

Royal Aquarium, Westminster, S.W., May, 1883.

ENTOMOLOGICAL REMINISCENCES.

BY AN OCTOGENARIAN.

[THE following pages are compiled from some rough notes supplied by that well-known collector Mr. H. J. Harding, now upwards of eighty years of age, who—although vigorous and strong in mind, and for his age in physique also—is, we regret to say, sadly crippled in means. We are indebted to our correspondent Mr. Sydney Webb for obtaining the material from Harding. The notes themselves are somewhat disjointed, but the following is the substance of them. He himself entitled them, "Recollections of Entomology and Entomologists sixty years ago."]

My first introduction to Entomology took place when I was about fifteen years old. I was taken to see a collection, and was

quite pleased with what I saw. An entomologist of the name of Sluse, who was clever at drawing and painting, induced my father to cultivate a taste for collecting, but he confined his efforts to the garden, consequently his knowledge never extended much further than "tortoisesHELLS," "peacocks," and "aldermen," as he called them. I often assisted him in taking those species common in cottage gardens. Soon after I became acquainted with a man of the name of Weatherhead, from whom I learned my first lesson, and with him I went to Colney Hatch Wood, where we frequently collected. I also about the same time became acquainted with Daniel Bidder, a coleopterist, who introduced me to the forest in the neighbourhood of Wanstead. I frequently made excursions to that place with other boys, having for our primary object the collection of blackberries, but I always had an eye to such insects as were flying at the time.

Charlton Pits was then a fine place for *Sesia ichneumoniformis*, and I took two dozen one afternoon; they feed on the black knapweed (*Centaurea nigra*). I also went to Birch Wood with young Bidder, and we worked with the net, sugar not then being known. We found a moth very plentiful on the wing, and as we did not know it we only took half a dozen each. We showed old Bidder our captures, and he said, "Why did you not take more,—in fact all you could?" He also said, "You will never get such a chance again." In this he was right, for I did not take *Toxocampa pastinum* again for many years. During these early days I was shown *Papilio machaon*, and all my thoughts were to get some. I was told that the nearest place at which they were procurable was Whittlesea Mere, and I started one Saturday afternoon with a great box. When I got about ten miles from home in the East of London, I began to enquire if I was right for Whittlesea Mere, and was surprised to find that no one could tell me; and it was not until I overtook a waggoner that I learned that it was somewhere in the Isle of Ely. I rode in his waggon all night, and in the morning he called me and said that he must turn off to Cambridge, and that I must keep straight on; and it was afternoon when I reached Whittlesea. Great was my surprise to find it a village; and as I could find no "swallow-tails" there, I began to enquire if any butterfly-catchers ever visited there. They said that there was one some time ago, but could not inform me where he lodged, and, what was still more discom-

forting, they could not tell me where I could find a bed. However, I was fortunate enough to find one at the Ferry House, about two miles over the marshes, and felt very thankful after my long journey. The next morning I enquired of the children if they knew what a swallow-tail butterfly was, and I heard with joy that they not only knew it, but that there were lots about there. "All right," I thought, "this is the place for me." "There goes one on the other side of the river," cried one, and I was soon across the river. "Where is it?" I cried. "There," said they, and it was with feelings of great disappointment that I beheld only a "tortoisehell." No *P. machaon* did I see that day, but at dusk I took several things, among which were two *Nonagrias*. Not bad things, and if I had known what they were I should have taken more. When the man of the house came home he told me that he could tell me where the butterfly men stopped, and he would direct me in the morning. After breakfast he told me that I was to go to a place called Home, then across the seven fields to Yexley. Off I went in good spirits, and got there by noon, and found the house, and enquired if any fly-catchers stopped there. Oh, yes! Mr. Chant and Mr. Bentley had stayed there! "All right," thinks I to myself, and after dinner I went out and was overjoyed to see *P. machaon* flying gaily over the reeds, but I could not catch them, as they were out of my reach. However, the next day I had them in a turnip-field, and it was a splendid sight to see them flitting over the turnip-blossom. I stayed there a fortnight, and then walked home, nearly eighty miles, well content with my captures.

Perhaps it may interest some to know how the locality for *Polyommatus hippothoe* was discovered, and how that butterfly came to be exterminated. About forty years ago Mr. Benjamin Standish (the grandfather) heard that *dispar*, as then called, had been seen in the Fens. *Dispar* was known and figured in 1792 and 1795. He got a painting of the butterfly, coloured by his father, and went down to the Fens and showed it to people there, but no one knew anything about it. Mr. Drake, at the 'Checkers,' told him that a man lodged there who worked in the Fens, cutting reeds, who was a most likely person to know. When the man returned from work Standish showed him the drawing, and said, "Do you know anything about a butterfly like this?" "Yes," said the man; "I saw some to-day." "Well," said Standish,

"what shall I give you to take me to the spot?" "No!" said the man, "I intend to take a lot up to London." Standish then offered him five shillings to take him to the place, but the man would not divulge the locality, even for a promise of two shillings for each insect captured. The landlord, however, told Standish where the man worked, and he was successful in finding the place, and took a fine lot of *P. hippothoe*. It soon got wind among the folks at the Fen that they were worth two shillings each in London, and two men came from Cambridge and secured a large quantity, which they took to London in boxes full, and sold them at sixpence each. I went down about three years after, and got some of the larvæ. They appeared to be very local, and most numerous where their food-plant—*viz.* the water-dock—was most abundant. The larva was collected by all persons, young and old. I bought two dozen larvæ of an old woman for ninepence, from which I bred some fine specimens, and sold them at one shilling each. I wish I had them now. Mr. Cole, at Holme Fen, took a large quantity of them. His back-yard was close to their locality. The last time I was there Mr. Cole said he had not seen one for some years. There was the food-plant in plenty on the same spot, but no larvæ. They had been too closely hunted for. However, I solaced myself by taking *Nonagria ulvæ* in Cole's stack-yard. As soon as it got dark they came out of the cut reeds and had a fly. They ran up the inside of the reeds like mice, but how they turned round to get back I cannot make out. I took some nice varieties.

In 1847-8 Mr. Doubleday was down in the Fens, and found *Zeuzera arundinis* in the dykes. He told a man he employed, who lived there, to look after them. He did so, and found the pupæ. I went down the next year, and found the imago. An account of them I published in the 'Zoologist' for 1850, as stated in the first volume of the 'Entomologist's Annual,' and that is the only account I have seen. About this time sugaring was discovered by Mr. Doubleday, who, in his vocation as a grocer, noticed that the moths swarmed round his sugar hogsheads in the back yard. There was a great desire among working entomologists to know how it was made, but the secret was retained by a few. All kinds of scents were tried, but were not found of much use. A man of the name of Courtney made some up, and sold it at one shilling and sixpence per pint. This discovery caused many rare things to become common. *Acronycta ligustri* was a rare moth, and

I have seen fourteen shillings refused for it, and that was even a wasted one. But sugar found them in plenty, and I am of opinion that there are few things really rare. You have only to find out their habits and food-plant. Look at *Aleucis pictaria*, only one taken in fourteen years, yet they existed in plenty on the bloom of blackthorn. Although a man searched Dartford Heath fence a fortnight without success, a few yards from him they swarmed at blackthorn. Since then they have been found in many places.

In the year 1847 Mr. Hindley and myself made up our minds to go to Dover and collect. We started in the steamboat to Margate, and walked to Deal. The wind was blowing very hard, and we had a difficulty in landing. But we arrived at Deal safely. The next morning it poured with rain, but we walked to Dover through it. When it cleared somewhat, we made up our minds to return, thinking that little could be done if we continued our proposed expedition. In walking across the sandhills, making for Sandwich, we took from the stems of grass two specimens of a *Lithosia*. This was in broad daylight. These I showed to Mr. Doubleday some days after, and he pronounced it to be a variety of the common one, but to make sure he sent it to his friend Herrich-Schäffer, who averred that it was *Lithosia pygmæola*. One of these specimens Mr. Robinson, of Limehouse, had, and one I retained for my own collection.

— Some twelve years after I thought I would go to Deal and try to find them again, and I was rewarded by finding them in plenty. I appear to have been the only person who collected on the south coast of Kent for some years. There was a man from Dover, who visited St. Margaret's Bay some years ago, of the name of Leplastre, who was a watch-maker. He seems to have taken *Stigmonota leplastriana*, which was named after him. In one of my rambles I went to St. Margaret's Bay; the weather was hot and thundery, at which time insects leave their retreats and fly. I captured during that evening a *Noctua* which I did not know, as it was much wasted. When Mr. Doubleday saw it he said that it was much wanted, and I promised to go again for it next season. I did so, and took seven the first night on the blossom of the bugloss, and several of *Plusia orichalcea*. The place is now destroyed by the inroads of the sea. In Mr. Stevens' sale a short time ago it was stated in the catalogue,—“*P. orichalcea*, five taken by Mr. Harding at Deal,” and “another lot taken and bred

by Mr. Harding at Deal." The truth is that I never bred one; I took one just out of pupa, which is of a yellow colour. An entomologist at Canterbury has sent out some specimens, which he has stated were taken by me. I have seen them, and they were never taken by me. There appears to be a manufactory at Canterbury for the produce of rare things. I may have taken in all some eighteen or twenty of *P. orichalcea*, seven of which were taken in one night.

During another of my rambles to Deal I procured *galii* larvæ, and I also fell in with a small brown moth in large numbers; that was *Acidalia ochrata*.

One stormy Saturday I was at Darenth Wood. At dusk I took seven *Xylomiges conspicillaris*, one of which laid several eggs; but what to feed the young larvæ on I did not know. In a book it said, "feed on vetch," but I could not get them to feed on anything else but blackthorn, which they took readily to; and I succeeded in breeding fifteen fine ones. A strange habit I noticed in the larvæ was this, that if I opened a door in the room where they were they would all fall down and lay among the dead leaves for an hour before they would take to their food again.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

NOTES ON THE SEASON OF 1882 IN Co. SLIGO.—My experience of the season of 1882, having been a bad one, agrees with that of most of your other correspondents. I have not, however, to record the absence of any usually occurring species, but the great scarcity of many generally the most abundant. This was more observable in the Diurni and Nocturni than in the other orders. *Pieris brassicæ*, for instance, was quite scarce, though the larvæ were very numerous in 1881; whilst of *Anthocharis cardamines*, remarkably abundant in this neighbourhood, three only were seen. *Lycæna alsus*, again, was almost as scarce; on the other hand, *Argynnis paphia* and *Chortobius davus* were, if anything, more abundant than usual. The following is the list of all my captures. The dates are arranged according to the month in which each species was first met with. In February, *Larentia multistrigaria* only. March, *Phigalia pilosaria*, *Anticlea badiata*, *Eupithecia pumilata*, *Teniocampa stabilis*, *T. gothica*, and *Pterophorus pterodactylus*; *E. pumilata* was abundant, much more so

than in the second brood. April, *Scotosia dubitata*, additional, only was taken. I was absent in Scotland from the 8th of April, returning on the 4th of May. During May I took *A. cardamines*, *P. rapæ*, *P. napi*, *Satyrus megæra*, *L. alsus*, *Chærocampa porcellus*, *Nola cristulalis*, *Arctia menthastri*, *A. lubricipeda*, *Demas coryli*, *Rumia cratægata*, *Odontopera bidentata*, *Iodis lactearia*, *Cabera pusaria*, *C. exanthemaria*, *Numeria pulveraria* (very rich dark specimens), *Lomaspilis marginata*, *E. venosata*, *E. vulgata*, *Melanippe subtristata*, *M. montanata*, *M. fluctuata*, *Coremia unidentaria*, *Cidaria corylata*, *C. russata*, *C. suffumata*, *Eubolia palumbaria*, *Cymatophora duplaris*, *Xylophasia rurea*, *Noctua plecta*, *Abrostola urticæ*, *Gonoptera libatrix*, *Botys fuscalis*, *Pyrausta ostrinalis*; *C. porcellus* was unusually abundant, two or three falling to my net every evening, and nearly all at the flowers of some kind of vetch. In June appeared *Pieris brassicæ*, *Vanessa urticæ*, *C. davus*, and *C. pamphilus* (some specimens of the latter with the outer half of the fringe bright yellow); *S. ægeria*, *L. alexis*, *Hepialus lupulinus*, *H. humuli*, and *H. velleda* very abundant, and in variety both of marking and size; *Nudaria mundana* still more abundant; *Euchelia jacobææ*, *Metrocampa margaritaria*, *Boarmia repandata*, mostly a very pretty pale variety, quite unlike any I have seen elsewhere; *Fidonia atomaria*, *Aspilates strigillaria*, *Emmelesia albulata*, *E. castigata*, *E. constrictata*, *Thera simulata*, *Ypsipetes elutata*, *Campptogramma bilineata*, *C. populata*, *Pelurga comitata*, *Acronycta rumicis*, *A. putris*, *X. sublustris*, *X. lithoxylea*, *X. polyodon* and black var., this year much less numerous than usual; *Mamestra brassicæ*, *M. furva*, *Apamea basilinea*, *A. gemina*, *Miana strigilis*, *Caradrina cubicularis*, *Agrotis segetum*, *A. corticea*, *A. exclamationis*, *Tryphæna pronuba*, *Noctua c-nigrum*, *Hecatera serena*, *Euplexia lucipara*, *Ligdia adusta* common at sugar, *Hadena dentina*, *H. pisi*, *H. oleracea*, *H. thalassina*, *Cucullia umbratica*, *A. triplasia*, *Plusia gamma*, *P. chrysitis*, *P. v-aureum*, *P. interrogationis*, *Scopula olivalis*, *Crambus culmellus*, *C. hortuellus*, *C. pascuellus*, *P. trigonodactylus*; one specimen of *P. interrogationis* was taken at flowers of sweet-william in my own garden, making the eighth species of *Plusidæ* so captured. In July the fresh arrivals were *S. janira* and *S. hyperanthus* amongst the *Diurni*; *Zygæna filipendulæ* absolutely swarmed on the sandhills; *Chelonia caja*, *Bombyx quercus*, the larvæ of which were very abundant on the sandhills in May, feeding on the dwarf sallow; *Ourapteryx*

sambucata, *Ellopija fasciaria*, *Cleora lichenaria*, *Venusia cambricaria*, *A. scutulata*, *A. aversata* and *A. bisetata*, *Abraxas grossulariata*, *Larentia didymata* and *E. pectinitaria*, *E. alchemillata* and *E. tæniata*, *E. nanata*, *E. centaureata*, *E. absynthiata*, *E. debiliata*, *Ypsipetes impluviata*, probably the autumn brood, as it was in good condition on July 12th; *Y. elutata*, *Melanthia ocellata*, *C. testata*, *E. mensuraria*, *C. immanata*, the usual forms; *Thyatira batis*, *Apamea oculea*, *Leucania conigera*, *L. pallens*, *Cerigo cytherea*, *C. alsines*, *N. triangulum*, *N. brunnea*, *N. baja* and *N. xanthographa*, *Dianthæcia carpophaga*, *P. bractea*, *Mania typica*, *T. lutealis*, *Hypena proboscidalis*, *Crambus perlellus*, *C. warringtonellus*, and *C. margaritellus*. *Emmelesia tæniata*, thanks to the kindness of Mr. Hodgkinson in sending me a sketch of the larva and food-plant, I hope to succeed in breeding. *T. bractea* was scarce, but I was fortunate in obtaining about 150 eggs from one, which I distributed to my friends, reserving twenty for myself: of these I have now feeding fifteen larvæ, and one pupa spun up on April 7th; many of the larvæ are still small, though all hatched at the same time. I am feeding them on groundsel and dumb-nettle; the former they seem to prefer; and as, since hatching, I have not lost one it seems to agree with them. In August my captures were *A. paphia*, *S. semele*, *L. olivata*, *C. russata*, *C. pyraliata*, *Anaitis plagiata*, *Nonagria fulva*, *Hydræcia nictitans*, which here varies very considerably, *Luperina testacea*, *Charæas graminis*, *A. cursoria*, *A. tritici*, *A. aquilina*, *A. obelisca*, *A. valligera*, *A. præcox*, *A. porphyrea*, *Polia chi*, *Epunda lutulenta* var. *lunibergensis*, *M. maura*, *Pyrausta purpuralis*, *Herbula cespitalis*, *C. tristellus*, *C. geniculellus*. This is the month for ragwort: *A. valligera*, *A. tritici* and *A. cursoria*, with an odd *A. præcox* and *E. lutulenta*, in the sunshine, are the principal captures; whilst at dusk *A. obelisca* and *A. aquilina* are to be found mixed with them. September, *Acherontia atropos*, *E. albulata*, *C. psittacata*, *H. micacea*, *N. glareosa*, *N. neglecta*, *Anchocelis lunosa*, *Xanthia ferruginea*, *P. pterodactylus*. *E. albulata* has been named before in my June list, and I have again inserted it here as being unknown to me to be double-brooded; my captures were only two, but in perfect condition. In October, *Xylina petrificata*, *Miselia oxyacanthæ*, *Phlogophora meticulosa*, and *Calocampa vetusta*, were all that occurred at ivy; *C. vetusta* was very scarce, whilst in 1881 it was quite easy to take forty or fifty in a night.—P. H. Russ; Culleenamore, Sligo, April, 1883.

CAPTURES IN 1883.—I have taken the following Lepidoptera up to this time:—*Gonepteryx rhamni*—one, at West Wickham; April. *Cymatophora flavicornis*—one, at a lamp near Croydon; April. *Calocampa vetusta*—one at sugar, West Wickham; April. *Brephos parthenias*—a few, West Wickham; April. *Pachycnemia hippocastanaria*—one, Addington hills. *Tephrosia biundularia*—several, West Wickham; April. *Hibernia defoliaria*—two, West Wickham; January. *Lobophora lobulata*—several, West Wickham. Larvæ of *Thera variata*, one of *Ellopija fasciaria*, and a number of small larvæ on juniper which I do not know.—W. M. GELDART; Croydon, April 24, 1883.

THECLA RUBI.—I do not know whether the appearance of *Thecla rubi* on April 12th is sufficiently early to be unusual, or of any interest to your readers. I mention the fact that I took one on this date on the cliffs here. I have only lived in this island for three years, but find on reference to my diary that in 1881 and 1882 the first specimens which came under my notice were on May 11th and 12th respectively. In all other instances this season appears extremely backward here, as I believe elsewhere.—(REV.) FRANK E. LOWE; St. Stephen's, Guernsey, May 7, 1883.

LYCÆNA ACIS IN SUSSEX.—It may interest some of your readers to know that I have in my collection a specimen of *Lycæna acis*, caught by my late friend Thos. C. Hedley in the White Fields, Abbots Wood, in July, 1881. I saw the insect caught, so that I am sure of its authenticity.—J. A. DYNES; 3, Hardwicke Road, Eastbourne, May, 1883.

HERMAPHRODITE ORGYIA PUDIBUNDA.—A hermaphrodite imago of *O. pudibunda*, exhibited alive at the Royal Aquarium in March last, with the abnormal larva of *Melanippe montanata* figured in this number, was noticed in the breeding-cage by me on March 4th. It had the antennæ and wings of the male, with the body of the female, and was one of a brood of seventy which I obtained from a batch of ova. This specimen deposited eggs which were, as might be expected, infertile. They were all fed alike on the leaves of the common hazel.—E. H. JONES.

BOMBYX QUERCUS.—Whilst walking from Siena to Monastero my attention was attracted by an insect flying slowly by me, and making a noise like a large grasshopper on the wing. I followed it till it settled on the road, and on coming up to it I found it

was a male oak-egger (*Bombyx quercus*), with a piece of dry blackthorn attached to it. The lower part of the body was much lacerated, one thorn having gone quite through it, and the wings were a good deal torn. It had evidently got entangled, and in its efforts to escape had broken off a piece of the dead wood, from which it was unable to free itself.—J. L. BEVIS; Siena, April 5.

PUPA OF CYMATOPHORA FLAVICORNIS.—Mr. W. R. Buckell's description in last month's 'Entomologist' (Entom xvi. 240) of his anomalous pupa of the above insect, with the head of the moth turned towards the tail of the pupa-case, is very curious and interesting, for the following reason:—Thomas Moufet, the father of British Entomology, in his 'Theatrum Insectorum,' London, 1634, says that during the final transformation of a lepidopterous insect the head of the pupa becomes the tail of the imago, and *vice versâ*. This statement, although disproved at some length by Swammerdam in his great work, published in 1669, has been frequently copied into "popular" works on Natural History during the last two hundred years, solely, I suppose, on Moufet's authority. I had always wondered why such an entomologist as Moufet should have fallen into such a grave error, for he was most careful to verify his statements by observation of facts, and conclude that he must have been led astray by a similar freak of Nature to that recorded by Mr. Buckell.—W. GARDNER; C. 18, Exchange Buildings, Liverpool.

ERASTRIA VENUSTULA.—In reply to Mr. Scott's query in last month's number (Entom. xvi. 114), I can only say that as far as my experience goes I have never seen the larva of the above-named species. I have also sought for the larva, but have never succeeded in finding it, having always assumed that it was absent from the place where I sought, but never had the slightest doubt that its food-plant was not *Tormentilla reptans*. Mr. Scott does not stand alone in his doubt, for I have since heard the same expressed by others whose experience has extended over a long period. I have hitherto accepted with broad faith the statements in the leading entomological works with regard to the food-plants of the species treated upon, and find it difficult even now to reject that which appears in Newman's 'British Moths,' viz. that *Tormentilla reptans* is the food-plant of *E. venustula*. I have no doubt that that painstaking entomologist had every reason for making the statement, but whether his information was based upon personal

observation or upon hearsay I cannot find any evidence. Although I have searched the 'Entomologist,' 'Entomologist's Monthly Magazine,' and the 'Entomologist's Weekly Intelligencer,' for many years back, I have failed to find any mention of this species feeding upon the plant mentioned. Mr. Stainton, in his 'Manual,' is silent upon the point, which would seem to indicate that he was not thoroughly certain about it. During my investigations I find that Mr. T. Eedle captured several in the year 1860, when *E. venustula* was considered a greater rarity than now, and which capture he chronicled in the 'Entomologist's Weekly Intelligencer,' and from which I presume he procured ova, for in a communication from him he states that he tried to breed *E. venustula*, having in the beginning about three hundred larvæ feeding during the month of July, that he fed them upon *T. reptans*, upon the flowers of which they at first appeared to thrive, but gradually showed a distaste for their food, and commenced to prey upon each other to such an extent that ultimately but one was left. He further stated that if he should attempt to breed them again he would do so separately. This would point to the fact that—like *Cosmia trapezina*, *Scopelosoma satellitia*, and others—the species in question is of a cannibalistic tendency, which I fail to find mentioned in any work on the subject. His remarks would also lead to two assumptions, viz., that he did not keep them sufficiently supplied with fresh food, or that the food was not adapted to them during their more advanced stages. The former could be easily proved by feeding them separately; but if the latter assumption is correct, then *T. reptans* is not the proper food. I find that Mr. E. G. Meek has succeeded in breeding it upon *Tormentilla reptans*, but he states that it is a difficult and delicate thing to rear. The specimens, contrary to the usual rule, are not nearly so well marked, nor in any respect so fine, as those which have been captured. This would likewise tend to prove that *T. reptans* is unsuitable as a food-plant, and I shall be very pleased to hear from anyone who has had experience in breeding it, and to what their experience leads them. Coming as this note does *apropos* to the time when *E. venustula* should be on the wing, perhaps some of our friends, especially those who work the Horsham district, who will doubtless take some during the current month, will take the trouble to get a batch of ova and settle the question, or, what will be preferable, search the blossoms of

T. reptans during July and August, and perhaps by that means render it certain that it is the proper food-plant. I am much obliged, however, to Mr. Scott for raising the question, as it is by such means that the habits of various species are chronicled, and prove useful in settling vexed questions; and it is much to be regretted that many more who take up Entomology as a study do not more freely give their experience for the general good.—W. H. WRIGHT; Secretary's Department, Inland Revenue, Somerset House, May, 1883.

[Newman distinctly says that his description of this larva was from living specimens given to him by Mr. C. J. Biggs, a frequent contributor to this journal. There is nothing relating to *E. venustula* beyond a record of captures in our own Natural-History journals; but Professor Hering says that most probably sheep-sorrel (*Rumex acetosella*) is the food-plant of the larva in Pomerania.—E. A. F.]

NEW BRITISH TRICHOPTERON.—While examining a small collection of caddis-flies formed by Mr. Service, of Dumfries, one specimen, a male, gave me considerable trouble, as it did not agree in certain details with any of the species described in Mr. M'Lachlan's 'Monographic Revision and Synopsis of the Trichoptera.' I submitted the specimen to Mr. M'Lachlan, who at once informed me that it was *Merophylax aspersus*, Ramb., variety. The species has been recorded from the South of Europe, while the variety has been taken at the Lake of Zurich in May and September. Unfortunately Mr. Service cannot give any date or exact locality where his specimen was captured; but he informs me that all the insects in the collection were taken within Torqueer parish, Dumfriesshire, he having only collected caddis-flies in three localities, so I hope that he may be able to turn up this species again. With his usual kindness he has placed the specimen in my cabinet. For a description of the species I would refer workers to that of *Stenophylax aspersus*, Ramb., in Mr. M'Lachlan's work already mentioned, page 132; and for that of the variety to the third supplement (not yet published) of that work.—J. J. KING; 207, Sauchiehall Street, Glasgow.

ERRATUM.—May number, page 109, line 7 from top, for "simile" read "smile."

ENTOMOLOGICAL SOCIETY OF LONDON.

FIFTIETH ANNIVERSARY.

May 2, 1883.—J. W. DUNNING, Esq., M.A., F.L.S., &c., President, in the chair.

The President read the following Address:—

“GENTLEMEN,—Before proceeding to the important business of the evening, I crave your indulgence whilst I make a few preliminary remarks. You scarcely need to be reminded that we this day complete the fiftieth year of our existence. It was on the 3rd May, 1833, that nine gentlemen—Messrs. Children, J. E. Gray, G. R. Gray, Hope, Horsfield, Rudd, Stephens, Vigers, and Yarrell—met and resolved to found the Entomological Society of London. No time was lost; for on the 22nd of the same month the first General Meeting was held at the Thatched House Tavern, the Rev. Wm. Kirby was chosen Honorary President, 103 Members were enrolled, and a Council of thirteen were chosen to complete the organization of the Society and prepare rules for its government. Rooms were taken at No. 17, Old Bond Street, and on the 4th November, 1833, under the Presidency of Mr. Children, the then Secretary of the Royal Society, a code of Bye-Laws was adopted, and our first scientific meeting was held.

“Of the Original Members, six, and six only, still survive—Prof. C. C. Babington, the Rev. Leonard Jenyns (now Blomefield), Sir Sidney S. Saunders, Mr. W. B. Spence, Mr. G. R. Waterhouse, and Prof. Westwood. Of these Mr. Waterhouse has the additional distinction of having been one of the original Council, and the first Curator of the Society.

“Our meetings continued to be held at 17, Old Bond Street from 1833 until 1852, when we removed to No. 12, Bedford Row; during nine sessions commencing in 1866, by the kindness of the Linnean Society, we assembled in Burlington House, but our Library remained at Bedford Row. In 1875 the Library and place of meeting were again united in this house; and though the building operations now in progress have prevented us from indulging in any celebration of our Jubilee, we shall soon be in the enjoyment of improved accommodation, and I hope it may be long before the Society has again to change its quarters.

“The Bye-Laws have been from time to time revised—in 1834, 1838, 1847, 1848, 1851, 1855, 1862, 1864 and 1876; but, in the main, the original rules still govern us. In 1838 the class of Corresponding Members was instituted; in 1848 Annual Subscribers were allowed; and in 1851 the grade of Associates was introduced. The last-mentioned class was abolished in 1855; and you are to-night to be invited to consider the

propriety of reverting to the original constitution, by prohibiting the future election of either Corresponding Members or Annual Subscribers, and leaving those classes to gradual extinction, or, as it is hoped, to absorption among the Ordinary Members.

“At the present moment we have 83 Subscribers and 205 Ordinary Members, making a total of 288 contributing Members. Three years ago I ventured to express from this chair a hope that we might be able to publish a Jubilee List of not less than 300 Members. It is not yet too late. And I appeal to each and all of you, Gentlemen, to be active in striving to attain this object.

“‘The Entomological Society of London is instituted for the improvement and diffusion of Entomological Science.’ From first to last, this has been our only object. To bring fellow-workers into friendly communication, and facilitate the interchange of ideas, to extract the hidden knowledge of secluded students, to provide a Library for consultation, to encourage observation and experiment, and to publish the results for the benefit of all whom they may concern—such is our aim, the very reason of our being. And I venture to assert that the Society has succeeded in its object. If any be inclined to doubt, I refer him to the thirty volumes of our ‘Transactions,’ to the record of ‘Proceedings’ at our more than 600 meetings, as proof of the activity and the unfailing ardour with which the Society has now for half a century devoted itself to the diffusion of Entomological Science.

“Let me recall the names of some who in their day were enrolled in our ranks—such men, for instance, as Adams, Allis, Atkinson, Bainbridge, Bakewell, Bedell, Bell, Bevan, Bladon, Bowerbank, Bree, Brown, Champion, Children, Clark, Crotch, Curtis, Darwin, Dawson, Desvignes, the Doubledays, Evans, Gould, the Grays, Guyon, Haliday, Hewitson, Hope, Horsfield, Howitt, Ingall, Ingpen, Jesse, Kirby, Lee, Macleay, Melly, Murray, Newman, Newport, Pickering, Raddon, Roget, Saunders, Shuckard, Smith, Solly, Spence, Spry, Stephens, Swanzy, Swainson, Sykes, Thwaites, Turner, Vigors, Wailes, Walker, Walton, White, Wollaston, and Yarrell.

“I might have added others to this list of departed worthies, and I am prohibited, by the fact that they are still amongst us, from mentioning many distinguished men; but the names I have recited, including students and workers in Entomology who have left their mark behind them, and others who happily were not limited to our own or even to kindred branches of Science, are sufficient to cast no light burden upon us and our successors to maintain the traditions of this Society. Is it nothing that we should stand in the place of such predecessors? Is it nothing that this Society should have formed a bond of union and friendship between them? Surely an Association like this fulfils a useful purpose if it does nothing more

than perform the humble function of the string that binds the pearls together.

"At the outset it was part of the plan of operations that a Collection of Insects should be formed; and in 1835 the Rev. Wm. Kirby presented his entire collection of entomological objects to the Society, unfettered by any restriction whatever. It was found, however, that the formation and maintenance of a General Entomological Museum were more than the resources of the Society would warrant; and in 1855 the Exotic Collection was discontinued. Eventually, after thirty years' experience, the formation of a British Collection was also abandoned; the Kirbyan cabinets, and all the type-specimens, found a permanent home in the British Museum; and the Curator of the Society was merged in the Librarian.

"Of the nine gentlemen who have filled the office of Curator or Librarian,—Messrs. Waterhouse, Pickering, Shuckard, Westwood, Bainbridge, Frederick Smith, Janson, T. A. Marshall, and Grut,—Mr. Smith occupied it for fourteen and Mr. Janson for twenty years; the present occupant is only in his sixth year of office, but it must be the wish and hope of all that he will continue to give us the benefit of his services for many years to come.

"Of Treasurers we have had but six—Messrs. Hope, Yarrell, Samuel Stevens, M'Lachlan, J. Jenner Weir, and Edward Saunders. Of these Mr. Yarrell acted for eighteen and Mr. Stevens for twenty years. I trust the present Treasurer will grow as old in office as the oldest of his predecessors.

"Originally there was but one Secretary, and the first was George Robert Gray; but at the beginning of 1834 he gave place to Mr. Westwood, and although Mr. W. B. Spence was for two or three years appointed Foreign Secretary, it was not until 1847 that two Secretaries were authorized by the Bye-Laws, and Mr. Westwood was provided with a colleague. The subsequent occupants of the office have been Messrs. Evans, Edward Doubleday, Douglas, Stainton, Wing, Shepherd, Janson, Dunning, Sharp, M'Lachlan, Grut, Verrall, Butler, Meldola, Distant, Fitch, and Kirby; so that by a curious coincidence the Society has during fifty years had just as many Secretaries as it has had Presidents.

"Including our Honorary President, who died in 1850 at the patriarchal age of ninety-two, I have had twenty predecessors in this chair. It has throughout been one of our rules that the officers shall be elected annually, and that the President shall not hold that office for more than two years consecutively. Messrs. Children, Stephens, Newport, Spence, G. R. Waterhouse, Newman, J. E. Gray, Douglas, F. Smith, Pascoe, A. R. Wallace, Sir S. S. Saunders, and Stainton have each held it for two consecutive years; Mr. Curtis for one year; Mr. Bates for three; Mr. W. Wilson Saunders and Sir John Lubbock for four; the Rev. F. W.

Hope and Professor Westwood each for six years. Nine of the twenty are still amongst us, and I am pleased to see that several of them are present this evening.

"Gentlemen, I can only regret that, by the irony of fate, it has fallen to *my* lot to fill the Presidential Chair on this occasion, when, of all others, it ought to have been occupied by one of the Fathers of British Entomology. But you have willed it otherwise, and I will bury my regret; nay, it is already swallowed up in the delight I feel at the commission with which I have been entrusted by the unanimous voice of the Council, and I am sure that the proposition I have now to make will meet with your approval, and be carried by acclamation.

"I have to suggest that Professor Westwood be made titular Life-President of the Society.

"There is no man to whom we as a body owe so much. An Original Member, he has never failed us; during the crucial period of our childhood he was the motive power, the life and soul of the Society; for fourteen consecutive years he was Secretary, and for part of that time he was Curator also. The Council has seldom been complete without him; he has been Vice-President times without number, and during six years (1851-52, 72-73, 76-77) he was our President. Whilst he resided in or near London, he rarely missed one of our meetings; even Oxford cannot keep him away from us; and there is not a single year from first to last that he has not been a contributor to our 'Transactions.' From 1827 to the present time his pen and his pencil have never been idle; his papers are scattered broadcast over the scientific publications of this and other countries; and to single out a few of his more important works it is enough to mention the 'Introduction to the Modern Classification of Insects' (1839-40), the 'Arcana Entomologica' (1841-45), the 'Cabinet of Oriental Entomology' (1848), the 'Genera of Diurnal Lepidoptera' (1852), and the 'Thesaurus Entomologicus Oxoniensis' (1874). What do we not owe to Westwood's 'Introduction'? has it not been to many of the present generation of entomologists the very fountain and sole source of their scientific views? His labours have ranged over the whole domain of our Science. Specialists may excel in their own particular groups, but as a general entomologist have we a man to compare with him?

"Scientific bodies, both at home and abroad, have delighted to do him honour: the Entomological Societies of France and Holland, of Berlin, Stettin, and St. Petersburg have claimed him for their Honorary List: other Scientific Associations in France, Germany and Austria, in Russia and Scandinavia, in the United States of North America and the Dominion of Canada, have vied with each other in conferring upon him such distinctions as lay in their power; Brazil has made him a Knight of the

Imperial Order of the Rose; and if scientific knighthood carried any outward sign, his breast would be one blaze of stars.

“At the foundation of the Society the joint authors of the ‘Introduction to Entomology’ were chosen Honorary Members. It was at the same time made one of our Bye-Laws that no other resident in the United Kingdom should be an Honorary Member; wisely, as I think, we have retained that Bye-Law, and I hope we shall retain it. The proposition to be submitted to you involves no infraction of that rule.

“But, in addition to the Honorary Membership which he shared with Spence, the venerable Kirby was made Honorary President for life. And it occurred to our Secretary who bears that honoured name that it would be a graceful act to confer a similar distinction upon Professor Westwood. As Kirby’s position was unique in 1833, so is Westwood’s now; and it needs no Bye-Law to forbid a recurrence of to-night. The laws of Nature will prevent it; for long before our second Jubilee the Original Members will be no more.

“I do not propose to abdicate the functions with which your kindness has invested me. But if it be your pleasure to adopt the suggestion that has been made, I shall be proud to recognise Prof. Westwood as my titular Chief, and to yield the Chair to him at any of our Scientific Meetings when we are favoured with his presence. I know no better way of showing that our constancy is equal to his, and that our gratitude is enduring and life-long. It is a barren title and an empty honour, but it is all that we as a Society can bestow. He has grown grey in our service, and in recognition of his services, to us in particular and to our Science in general, I ask you to confer upon him a title which will be a standing record of the esteem in which we hold him, and which throughout the evening of his days shall assure him of our affectionate respect.”

This proposal was carried by acclamation, and Professor Westwood was declared Honorary Life-President of the Society.

SPECIAL MEETING.—A Special Meeting having been convened, pursuant to a requisition presented to the President and Council, for the consideration of certain proposed alterations in the Bye-Laws, which had been read at the three preceding meetings of the Society,—

Mr. E. A. Fitch proposed, and Mr. Pascoe seconded, that the Annual Contribution for a Member be raised from One Guinea to Two Guineas, and that Chapter 13 of the Bye-Laws be altered accordingly. The meeting was addressed by Messrs. Sheppard, Distant, M'Lachlan, Stainton, Kirby, Grut, C. O. Waterhouse, Lloyd, Edward Saunders, and Sir Sidney Saunders; and by Mr. Fitch in reply. The proposal was negatived by 19 to 5. A proposal to abolish the Admission Fee was withdrawn.

Mr. Grut proposed, and Sir Sidney Saunders seconded, that no more Annual Subscribers should be elected, and that Chapter 2 of the Bye-Laws should be altered by adding thereto the words, "But no Subscriber shall hereafter be elected." The meeting was addressed by Mr. Kirby and Mr. Fitch; and the proposal was carried by 23 to 2. The proposed consequential alterations in Chapters 12 and 15 were likewise carried.

Mr. W. F. Kirby proposed, and Mr. C. O. Waterhouse seconded, that no more Corresponding Members should be elected, and that Chapter 2 of the Bye-Laws should be altered by striking out the words "Corresponding Members." The meeting was addressed by Mr. J. Jenner Weir, Sir Sidney Saunders, Messrs. Fitch and Stainton; and the proposal was carried by 15 to 3. The proposed consequential alteration in Chapter 16 was likewise carried.

Mr. E. Saunders proposed, and Mr. Alfred Lloyd seconded, that every Member who has paid the Annual Contribution for the year shall be entitled to a copy of the 'Transactions' published during the year, and that Chapters 15 and 21 of the Bye-Laws be altered accordingly. The meeting was addressed by Messrs. Salvin, Stainton, Waterhouse, Weir, Kirby, Distant, and Sir Sidney Saunders; and the proposal was carried by 25 to 3.

Mr. M'Lachlan proposed, and Mr. C. O. Waterhouse seconded, that the mode of election of the Council and Officers be altered by requiring notice to be given of candidates proposed to be substituted for any of the Members recommended by the Council, and that Chapter 20 of the Bye-Laws and the Schedule thereto be altered accordingly. The meeting was addressed by Mr. Jenner Weir, Mr. Wormald, and Sir Sidney Saunders; and the proposal was carried by 16 to none.

The result was that the proposed alterations in Chapters 8 and 13 were not carried; and that all the proposed alterations in Chapters 2, 12, 15, 16, 20 and 21 were carried.

The Ordinary Meeting was then resumed.

The minutes of the April meeting were read and confirmed.

Donations to the Library were announced, and thanks voted to the respective donors.

Messrs. E. A. Butler (Arnold House, University School, Hastings) and W. H. Miles (33, Paris Street, Palace Road, Lambeth, S.E.) were balloted for and elected Members of the Society.

In consequence of the lateness of the hour all scientific business was postponed to the next meeting.

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JULY, 1883.

[No. 242.

MEMORANDA ON INSECTS IN THEIR RELATION TO FLOWERS.*

BY ROBERT MILLER CHRISTY.

THE following are details of observations taken at intervals upon the methodic habits of insects—principally of Fossorial Hymenoptera—when visiting flowers in search of honey.

1.—April 22, 1881. Pounce Wood, near Saffron Walden. A specimen of *Bombus scrimshiranus* which I watched exhibited most systematic habits, as it seemed to visit every flower on each umbel of *Primula elatior* that it settled upon, then went over, in a similar manner, all the other umbels on the same plant, afterwards going to the next nearest plant, the flowers on which were treated just the same.

2.—Sept. 9, 1881. Top of Hambledon Hills, Yorkshire. A large humble-bee visited flowers of *Digitalis purpurea* many times, avoiding all other sorts.

3.—Sept. 14, 1881. Garden at Chignal St. James, Essex. Many flowers were out, but a large black and yellow humble-bee, with the hinder part of its body whitish, visited red *Antirrhinum majus* and red *Nasturtium* only, alternately, the following number of times, commencing with the former:—39, 2; 7, 3; 10, 3; 12, 1; 27, 2; 1, 2; 14 (*Antirrhinum*); it then took a long flight, visited two flowers of *Lamium purpureum* (also red), and disappeared. Thus this bee made in all 125 visits, but it did not seem to be at all systematic in only once visiting particular flowers of *Antirrhinum*, but sometimes entered a flower twice over, refusing to visit others at all—generally, I believe, those that were rather

* For further information on this subject consult a paper read by me before the Linnean Society, March, 1883, and now being published in the Society's journal.

withered. It will be noticed that all the flowers visited were red, and that although the *Antirrhinum* and *Nasturtium* were visited alternately, the number of consecutive visits paid to the former were (with one trifling exception), always greater than to the latter.

4.—Sept. 18, 1881. On a flowery roadside bank near Audley End, Essex, I watched a bee of the same species as the foregoing. It paid 46 visits to *Thymus serpyllum*, 6 to *Lamium purpureum*, 4 to thyme, and was then missed, but half a minute later the same bee visited *Lamium purpureum* 10 times, *Thymus serpyllum* once, a yellow *Hieracium* 5 times, *Lamium purpureum* 4 times, *Lamium album* twice (buzzed round *Urtica dioica* as if looking for flowers), *L. purpureum* 19 times, *L. album* once, *L. purpureum* 16, and then flew away altogether. This bee therefore paid 114 visits to four species of flower, of which two were reddish, one white, and one yellow. The number of visits paid altogether to each species is as follows:—*T. serpyllum* 51, *Lamium purpureum* 55, *L. album* 3, and *Hieracium* 5. This certainly does not show much method.

5.—Same date and place. A smaller, darker bee, but otherwise much the same as the last, visited *Lamium album* only, 49 times before being lost sight of.

6.—Same date and place. A bee of the same species visited *Lamium album* 31 times and was lost, having avoided all else.

7.—Same date. Railway-bank, near Saffron Walden. A large humble-bee visited 5 flowers of *Senecio jacobæa*, 1 of *Centaurea nigra*, and 1 of *S. jacobæa*, and was lost.

8.—Same date and place. A smaller bee passed, with only a momentary hesitation, some flowers of *S. jacobæa* and *Hieracium*, but afterwards visited 5 of *Centaurea nigra*, 1 of *S. jacobæa* and was then lost.

9.—Same date and place. Another bee of the same species visited *C. nigra* six times in succession, and was lost.

10.—Same date and place. This observation was made on a most industrious but unmethodic bee of the same species as the last. It visited the following flowers the following number of times:—*Senecio jacobæa* 22 (many being however the same flower twice visited), *Hieracium* 1 (passing a *Ranunculus* (? *bulbosus*) with only a momentary glance), *S. jacobæa* 43 (many of them on plants already visited more than once), took a short flight and inspected several flowers of *Ranunculus bulbosus*,

Hieracium, *Verbascum nigrum*, and *Hypericum perforatum*, then visited *S. jacobæa* 16 times, *Hieracium* once, *S. jacobæa* 10 times (on a plant already visited), revisited for a moment plants of *Hypericum perforatum*, then actually returned to plants of *S. jacobæa* previously visited, again sucking the flowers thoroughly, afterwards going to *Hieracium* 1, *S. jacobæa* 9 (on a fresh plant), touched *Trifolium pratensis* and a flower of *Hieracium*, thoroughly visited the flowers on a fresh plant of *S. jacobæa*, then went back to several of the old plants of *S. jacobæa* already (to all appearances) well visited several times, and revisited them thoroughly, afterwards visiting five flowers of *Malva sylvestris*, and finally flying off. As all this took place within an area of 10 or 20 yards square, this bee evidently did not believe in being very methodic, or in taking very long excursions. Most of the flowers on the bank were yellow, such as *Senecio jacobæa*, *Hieracium*, *Hypericum*, and *Verbascum*. The bee paid about 200 visits to 5 species, 3 of which were yellow and 2 red. I counted 91 visits to *Senecio*, but the real number must have been at the very least twice that, while the visits to *Hieracium* were 3, to *Hypericum* 1, to *Trifolium* 1, and to *Malva* 5. The visits to the three last-named species were very short, so that perhaps the error was perceived before the nectar was sucked.

11.—Sept. 25, 1881. A garden with a great variety of flowers at Great Saling, Essex. A large humble-bee visited one flower of the *Agapanthus* lily, several flowers on five plants of red *Antirrhinum majus*, one a pink *Hydrangea*, touched white *Antirrhinum* but passed the red unnoticed. Several minutes later the same bee (I think) visited many flowers on another plant of *Agapanthus*, thrice taking flights and returning, then, after a long rest on the greenhouse, visited two flowers of *Delphinium* and was lost. This observation shows very little method, if any.

12.—Same date and place. A smaller bee visited several flowers of scarlet geranium (perhaps only settled on them), two of *Nasturtium*, several on *Linaria cymbalaria* and was then lost.

13.—Same date and place. A small humble-bee, first seen on *Delphinium*, visited several flowers both of *Fuchsia* and of scarlet *Lithospermum*, returned to *Fuchsia* after having touched *Geranium* and was lost.

14.—Sept. 26, 1881. Bridge-End Gardens, Saffron Walden. Many garden flowers growing around, such as pink and white

phloxes, pink stock, yellow pyrethrum, dahlia, and a quantity of *Campanula* (? *media*—the large Canterbury bell). Late in the evening I watched a humble-bee at work on the *Campanula*, and kept account of the number of flowers it visited on each different plant. The results were as follows:—6, 5, 1, 3, 1, 2 (on the plant visited first), 2, 1, 1, 1, 5, 3, 1, 1, 3, 2, 2, 2, 2, 3, 8, 3, *i.e.*, 58 flowers in all on 21 plants.

15.—Same date and place. A similar bee visited the *Campanula* as follows:—7, 4, 2 and 2, *i.e.*, 15 flowers on 4 plants.

16.—Same date and place. A similar bee visited the *Campanula* 5 and 10 times, *i.e.*, 15 flowers on 2 plants.

17.—Same date and place. A similar bee visited the *Campanula* 2, 10, 4, 8, 6 and 11 times, *i.e.*, 41 flowers on 6 plants. These four observations show absolute constancy, inasmuch as 4 humble-bees paid 129 visits to flowers on 34 plants of *Campanula*, without once visiting another species, though in the last case the bee settled momentarily on a flower of pink stock. Many flowers of *Campanula* were, however, obviously rejected—the bee going to the entrance but no further, perhaps because the flower was withering or had just been visited, so that the bee was in some way enabled to perceive the absence of nectar.

18.—Oct. 2, 1881. Meadow in Navestock Park. No flowers present, but a quantity of *Scabiosa succisa* and an occasional *Ranunculus* (? *acris*). A humble-bee was observed to make 13 visits to the former.

19.—Same date and place. Another humble-bee paid 32 consecutive visits to *Scabiosa succisa*, and was lost.

20.—Same size and place. Another humble-bee visited *Scabiosa succisa* 57 times, although in this case there were several other species near. Several times I caused a head of flowers to be twice visited thoroughly, by picking it and presenting it to the bee.

21.—March 8, 1882. Garden at Chignal. A hive-bee which I watched, clearly rejected several flowers of *Galanthus nivalis* and red *Primula vulgaris*, but paid 14 visits to flowers (some of them visited twice) on 4 different plants of yellow *P. vulgaris*, and was then lost. Other early spring flowers grew around.

22.—March 12, 1882. Near Audley End, Essex. Observed a hive-bee to visit 14 flowers of *Ranunculus ficaria* and then fly away. No other species on the same spot.

23.—March 15, 1882. Westley Wood, Saffron Walden. A male specimen of *Anthophora acervorum* paid five visits to *Primula vulgaris* and was then lost. *Endymion nautans* and *Ranunculus ficaria* grew around.

24.—March 19, 1882. Fox's Wood, Great Bardfield, Essex. *Ranunculus ficaria* grew in great abundance in an open part of the wood, mixed with a few other species. A small tortoiseshell butterfly, *Vanessa urticae*, visited it 19 times, then settled on the ground and afterwards flew away.

25.—April 10, 1882. Meadow at Great Bardfield. An individual of *Anthophora acervorum* visited consecutively 108 flowers of *Primula elatior* (which was abundant), rejecting many, but without even hesitating at the flowers of any other species, although quantities of *Ranunculus ficaria* grew on the same spot, and *Cardamine pratensis*, *Bellis perennis*, *Ranunculus acris*, *Nepeta glechoma*, *Leontodon taraxacum*, &c., were out close by.

26.—April 11, 1882. Avesey Wood, near Thaxted. *Primula elatior* and violets (*Viola* ? *canina*) in very great profusion intermixed, but no other species of any importance. Plenty of hive-bees were visiting both species, but I did not observe any change from one to the other.

27.—Same date and place. An individual of *Bombus sciranthus* which I watched seemed to be visiting flowers of *P. elatior* and *Viola canina* one after another, apparently with perfect indifference.

28.—Same date and place. An individual of *Anthophora acervorum* which I watched did exactly the same as the last bee mentioned.

29.—April 11, 1882. An open part of Grassy Wood, Wimbish. I watched many hive-bees visiting flowers of *Primula elatior*, *Viola canina*, *Ranunculus ficaria*, and *Mercurialis perennis* (all of which grew in abundance), but did not see one single instance in which a bee changed from one species to another.

30.—Same date and place. A hive-bee visited *Primula elatior* 23 times, having avoided all else when I caught him.

31.—Same date and place. A sulphur butterfly, *Gonepteryx rhamni*, visited *Primula elatior* 3 times and departed, having passed over all else.

32.—May 11, 1882. A cut-down wood immediately behind Chelsfield Station, Kent. At one spot *Galeobdolon luteum*,

Euphorbia amygdaloides, *Ajuga reptans*, and *Primula vulgaris* grew abundantly, with a few plants of *Endymion nutans*, *Myosotis palustris*, *Stellaria media*, *Potentilla reptans*, *Ranunculus auricomus*, *Senecio vulgaris*, and a small scarlet *Vicia* (? *lathyroides*). A hive-bee, which whilst I watched it kept to a very small area of ground, confined itself entirely to the *Galeobdolon*, which it visited no less than 117 times before I lost it, though between these visits it took one short and one longer flight, and also hovered round, but rejected, *S. vulgaris*, *R. auricomus*, 3 plants of *E. amygdaloides* and 3 of *Galeobdolon*, all of which, it may be noticed, have more or less yellow flowers. This is, I think, in every respect the most satisfactory observation which I have to record, and, as is the case with nearly all my observations on the hive-bee, shows absolute constancy.

33.—May 17, 1882. In a meadow at Chignal I watched a hive-bee whose head, thorax and body were covered with pollen, and which visited 43 flowers of *Ranunculus* (? *acris*), avoiding many of the older flowers, but not looking at any other species, although *Trifolium pratensis*, *Rhinanthus crista-galli*, and *Stellaria media* were pretty plentiful at the same spot.

34.—May 17, 1882. Wood at Chignal. A black humble-bee, striped behind with yellow and white, made 52 visits to *Ajuga reptans*, then one to *Viola canina* (also blue), and afterwards flew right away, having passed over *Ranunculus auricomus* and *Lychnis diurna*.

35.—May 28, 1882. Meadow at Chignal. A small humble-bee, striped behind with yellow and gray, visited *Trifolium pratensis* 7 times, passing over abundance of *Ranunculus acris*, with some *Bellis perennis*, *Chrysanthemum leucanthemum*, *Cardamine pratensis*, and *Lychnis flos-cuculi*.

36.—Same date and place. A large humble-bee with reddish thorax visited *Trifolium pratensis* 9 times, rejecting all else.

37.—Same date and place. A large humble-bee, red behind, visited *Trifolium pratensis* 11 times, avoiding all beside when I disturbed it.

38.—May 29, 1882. In a meadow at Chignal a hive-bee which I watched paid 47 consecutive visits to *Ranunculus acris*, passing over plenty of *Trifolium pratensis*, *Bellis perennis*, *Heracleum sphondylium*, a small *Rumex* and *Stellaria media*.

(To be continued.)

THE MACRO-LEPIDOPTERA OF EPPING FOREST IN JULY.

BY ARTHUR J. ROSE.

ONLY those who have really gone through it can form any adequate idea how perplexed a beginner feels when July comes upon him, bringing with it, as it does, an emergence of more than half the imagines of our whole species of British Lepidoptera. It is at this time that he feels most the want of a helping hand to put him in the right way of working, and to point out the localities where such species as he may be in search of may be found.

Having gone through this critical stage, viz. that of the early beginner, I remember perfectly well how much use it would have been to me had I had some trustworthy guide to look for information with reference to the insects found in Epping Forest; and it is this experience which leads me to extract from my journal a list of species which occur there, so that the young student may be able to form some idea of what he may fairly expect to find. Of course at the outset he must not expect to get all the species that I enumerate in one season, as my diary extends over several years; but by working continuously he will find that many of those named will be among his captures. Although I write with the main idea of assisting the younger students, many of whom are numbered among the readers of the 'Entomologist,' yet this article may enable some of our more advanced readers to fill some neglected rows in their cabinets.

Now that Epping Forest is more accessible than in former years it presents a collecting ground not to be despised, and anyone working it continuously will find it far from unprofitable, and it will be found especially so to the beginner.

During the current month may be found a list of butterflies, which, taking into account the proximity of London, is by no means a despicable one. It is not yet too late to take a series of *Argynnis selene*, although it would have been in better condition had it been taken a week or two earlier. In the same locality, viz. near the "Wake Arms," *A. adippe* will be found throughout the month. Not far off, viz. at the King's Oak at High Beech, *Lycæna ægon* may be taken from the beginning to the third week. *Satyrus megæra* and *S. ægeria* may be seen on any fine day in any

part of the Forest, but generally plentifully in that to the west of Monk's Wood. In like plenty may also be found *L. alexis*, *Vanessa urticae*, *Pieris napi*, *P. rapæ*, *P. brassicæ*, and *Polyommatus phlæas*. In the lower grounds, and almost all over the Forest, the skippers are represented by *Hesperia sylvanus* and *H. linea*. Towards the end of the month *Gonepteryx rhamni*, the second brood of *L. argiolus*, *V. polychloros*, *Thecla betulæ*, and *T. quercus*, may be found, the latter often in great plenty. Around the fields and open glades sporting in the sunshine will be found almost everywhere *S. tithonus*, *S. janira*, and usually swarms of *S. hyperanthus*. *Colias edusa*, if it should occur in any numbers, will be sure to show up on the edges of the Forest.

A visit to High Beech early in the month may not be too late to obtain *Erastria venustula*, and still further on in Monk's Wood, by diligent searching on the trunks of the trees, *Stauropus fagi* may yet be taken. *Procris statices* also, about Chingford and Sewardstone, may yet be found on the tops of the clover and on the flowers of the ragged-robin. *Liparis monacha* will also be upon the wing, but it is not common, although another of the same family, viz., *L. auriflua*, abounds. *Nola cristulalis*, and *L. salicis*, on the borders of the Forest around Walthamstow, and *Calligenia miniata* also will be out, and on the trunks of the willows, *Cossus ligniperda*. Those who neglected to obtain *Odonestis potatoria* in the larval state will be able to do so now upon the wing. *Notodonta camolina* will not yet be over, nor *Platypteryx hamula*. *Bombyx neustria* may be seen, and the second brood of *Cilix spinula* may now be taken. *B. quercus* is out this month and particularly abounds along the lanes of Sewardstone, and anyone who has bred a female may do well at assembling. To those of a very patient turn of mind, a fair amount of searching on the black poplar, in the vicinity of Monk's Wood, may yield reward in the shape of larvæ of *Clostera reclusa*, and those who like beating may hope to find on the oak the larvæ of *N. chaonia*, *N. dodonea*, and *N. trepida*, and the honeysuckle should be searched for the larvæ of *Macroglossa fuciformis*. Among the *Lithosidæ* on the wing may be mentioned, *L. complanula*, and the *Zygæna* family is represented by *Z. filipendulæ*, both obtainable at Chingford.

The list of Geometræ will be found to be very varied and extensive, so much so in fact that our space in this journal will

only allow an enumeration of a part of the number. Among the species most in repute may be mentioned *Phorodesma bajularia*, *Angerona prunaria*, *Geometra papilionaria*, and *Pericallia syringaria*. The first-named may be taken both at Chingford and the Hagger Lane Forest, and sometimes occurs in large numbers throughout the month. The graceful flight of *A. prunaria* may be witnessed almost everywhere in the Forest at dusk, especially in that part of it abutting on Chingford Station, and as several dozen may be taken on almost any fine evening, a varied series may be had without much difficulty. *G. papilionaria* is taken, although sparingly, wherever the birch abounds, and *P. syringaria* at Walthamstow and High Beech. Of ubiquitous occurrence may be mentioned *Cabera exanthemaria*, *Metrocampa margaritaria*, *Hemithea thymia*, *C. pusaria*, *Acidalia aversata*, *Melanthia ocellata*, *Coremia ferrugata*, *Melanippe subtristata*, *A. bisetata*, *Cidaria fulvata*, and many varied forms of *Ypsipetes clutata*, both of the latter insects often coming to sugar. Hedges around Walthamstow near which the ragged robin grows will furnish us with *Emmelesia decolorata*, and wherever the common chervil grows there will be found *Larentia didymata*. *M. rubiginata*, *Ephyra punctaria* and *Ligdia adustata* are to be found everywhere, and *Timandra amataria* may be secured in most parts of the Forest. The rapid flight of *Ourapteryx sambucata* will be seen true to its time, viz., about the 10th July, and is one of the best time-markers among the Geometræ. *Camptogramma bilineata* will furnish the young beginner with a varied series, from light yellow to dark brown, and *Abraxas grossulariata*, common though it is, will generally repay the earnest worker by revealing many variations of marking and colour. *Pseudoterpna cytisaria* is now on the move, and the beginner will find how difficult it will be to get a satisfactory series, and will remember next year that the best way to get it in good condition is to collect the larva, which being of a light green colour, with a purple marking along the spiracles, forms a pretty object when feeding on the *Genista anglica*, which it does early in June, wherever that plant is found growing in the Forest. Among the thorns I may enumerate *Selenia illunaria*, *Crocallis elinguaris*, *Ennomos angularis* (Monks Wood, plentiful.) Many more may be brought into view by beating the herbage and various undergrowth.

A still longer list of Noctuæ may be found, among which many

good species can be enumerated. Sugaring in July is often doubtful, in which case the collector must trust to his net to fill his boxes, but when it is good a numerous assemblage may be expected to the feast. Among others which I have taken I may enumerate *Cymatophora duplaris*, *Dicylea oo*, *Noctua augur*, *Hadena dentina*, *Leucania comma*, *N. c-nigrum*, *Aplecta nebulosa*, *Grammesia trilinea*. Both *C. duplaris* and *D. oo* I have found but sparingly of late years, but if sugar is tried frequently there is little doubt of success. *Dipterygia pinastri* comes to it in large numbers, and the same may be said of *Thyatira batis* and *T. derasa*, *N. brunnea*, *N. triangulum*, *N. plecta*, *N. rubi*, *Axylia putris*, *N. xanthographa*, *Tryphæna orbona*, *Apamea oculatea*, *Rusina tenebrosa*, *Euplexia lucipara*; *Cosmia affinis* and *C. diffinis* may be taken wherever the elm grows, and the best place in my experience is near Chingford Hatch. Around those parts of the Forest where there is much cultivation, *Agrotis segetum*, *A. exclamationis*, *Xylophasia lithoxylea*, *A. corticea*, *Mania typica*, *Caradrina morpheus*, *Hadena oleracea*, *L. pallens*, *L. impura*, and *Mamestra persicariæ* may be found in any numbers. Among the *Miana* family may be found in great variety *M. strigilis*, *M. fasciuncula*, *M. furuncula*, and on the grassy fields between Chingford and "The Owl" may be found *M. arcuosa* in plenty. In damp marshy places, almost everywhere in the Forest, may be found *Nonagria despecta*, *Amphipyra pyramidea*, *X. hepatica*, *Tryphena fimbria*, and *Amphipyra tragopogonis* may be obtained almost anywhere, and *Acronycta megacephala* wherever there is a growth of poplar.

A trip to Wanstead Flats about the middle of the month would ensure *Hadena pisi*; *Hepialus sylvinus*, and its congener *H. hectus* can be taken, hovering over the ferns, in any quantity in all open parts. The larvæ of *Euchlidia mi* may also be found in plenty in that direction.

It will thus be seen that during July a great deal may be done, and with the increased facility for reaching the Forest afforded by the Great Eastern Railway, even those who live in London can manage to spend a summer's evening there after their day's work. I should be greatly pleased and repaid if this article should induce the younger entomologists to try this my favourite hunting-ground, and would wish to close with this remark—Do not catch an extravagant number of a good species, just because you have the opportunity, although exchange in moderation is a

legitimate way of increasing our collections. I know of many instances in which a good insect has been exterminated, which otherwise (but for the greed of a few) might still be fairly plentiful in its old haunts.

36, Rodney Road, Clapton, E.

INTRODUCTORY PAPERS ON ICHNEUMONIDÆ.

By JOHN B. BRIDGMAN AND EDWARD A. FITCH.

No. III.—CRYPTIDÆ (*continued*).

CECIDONOMUS, *Bridgm.*

Black, greater part of legs red; aculeus as long as the abdomen (male and female).

- * Wings with an areolet. - - - - *westoni*, 2—3 lines.
 ** Wings without an areolet. - - - - *gallicola*, 2—3 lines.

Described at Entom. xiii. 264–5; and for their affinities and economy see Entom. xiii. 254. Dr. Capron has since taken a specimen of *C. westoni* at Shere. *C. ? rufus*, Bridgm., is a synonym of *Hemiteles inimicus*, Gr.

ORTHOPELMA, *Tasch.*

Segments 2nd and 3rd brown-marked, front legs partly red, base of hind tibiæ testaceous; aculeus half or one-third of abdomen (male and female). - - - - 1. *luteolator*, 2—2½ lines.

This species is the common parasite of *Rhodites rosæ*, and may generally be bred from the rose bedeguar galls in May and June of the second year. We have also bred varieties from the galls of *R. eglanteriæ* and *R. rosarum*, but not commonly.

CATALYTUS, *Foerst.*

Base of antennæ, prothorax, scutellum, middle of abdomen and legs, red (male and female). - - - - 1. *fulveolatus*, 1½—2 lines.

Recorded by Marshall as doubtfully British. Mr. Bridgman has taken a short-winged female and a male with almost fully-developed wings near Norwich, and Mr. E. A. Butler captured a fine female at Battle last year. See Bridgman's remarks under "Aptesis Foersteri" (Trans. Ent. Soc. Lond., 1882, p. 146; 1883, p. 161).

CREMNODES, *Foerst.*

Stramineous, head and apex of antennæ black, apex of abdomen fuscous, 1st segment linear (female). 1. *atricapillus*, $\frac{3}{5}$ — $\frac{4}{5}$ line.

This distinct species is not uncommon in Britain.

STIBEUTES, *Foerst.*

A. Prothorax and mesothorax more or less red, legs and base of antennæ red (females).

a. Apex of 1st segment and 2nd entirely red; aculeus rather more than one-fourth of abdomen. - - - 1. *gravenhorstii*, $1\frac{1}{2}$ lines.

b. 2nd and 3rd segments reddish yellow, the latter with a brown band; aculeus scarcely shorter than the 1st segment.

2. *bonellii*, $1\frac{1}{2}$ line.

B. Thorax black, abdomen chestnut-brown, lighter or darker; aculeus as long as the 1st segment (female). - - - *heinemanni*, $1\frac{1}{2}$ line.

The species of this genus are generally rare, and nothing is known of their economy. Dr. Capron has taken *S. heinemanni* at Shere (Entom. xii. 15); only *S. bonellii* was included in Marshall's 1870 'Catalogus.'

AGROTHEREUTES, *Foerst.*

A. Thorax red; legs nearly entirely red (females). 2. *hopei*, 2—3 lines.

B. Thorax black, or almost entirely so; legs red (females).

a. Scutellum red. - - - - - 1. *abbreviator*, $2\frac{1}{4}$ — $2\frac{3}{4}$ lines.

b. Scutellum black. - - - - - *batavus*, $2\frac{1}{2}$ lines.

These are probably varieties of one species; all, together with another doubtful species (*A. destitutus*, Voll.), are well figured in 'Pinacographia' (pl. 37, figs. 1-4); they are probably subapterous females of various known winged male *Crypti*. Marshall records a full-winged specimen of *A. abbreviator* from Corsica (Ent. Mo. Mag. viii. 162). Thomson says that *A. abbreviator* is the female of *Cryptus pygoleucus*, uniting them under the name *Spilocryptus dispar* (Opusc. Ent., p. 505); but whether he had any further proof than Marshall's strong inclination is not stated (*cf.* Ent. Mo. Mag., viii. 119). Brischke says the male is *Hemimachus albipennis*, Ratz., which was bred by Siebold from a *Psyche* case (Schrift. nat. Gesell. Danzig, iv. ii. 2; iv. iii. 201). Kriechbaumer bred the female from *Psyche fusca (calvella)*. *A. hopei* is the common form in Britain; it is admirably figured by Curtis (B. E., pl. 536). Brischke bred it from *Psyche viciella*,* and

Snellen from *P. fusca*. *A. batavus*, Voll., was captured by the Rev. E. N. Bloomfield at Guestling, near Hastings (Trans. Ent. Soc. Lond., 1881, p. 154).

APTESIS, *Foerst.*

- A. Base and apex of abdomen red (female). 1. *nigrocincta*, 2—3 lines.
 B. Apex of abdomen not red (female).
 a. Antennæ bicoloured (red and black).
 * 2nd and 3rd abdominal segments red. - 2. *hemiptera*, 2 lines.
 ** Apex of 1st and 2nd segments entirely testaceous, remainder brownish. - - - - 5. *stenoptera*, $1\frac{1}{2}$ line.
 b. Antennæ tricoloured.
 * 2nd and 3rd abdominal segments red.
 † 1st segment black, apical margin red. 3. *microptera*, 2— $2\frac{3}{4}$ lines.
 †† 1st segment entirely red.
 † Mesothorax red, with a round black mark on the back.
 4. *brachyptera*, 2 lines.
 †† Mesothorax entirely red. - - - - *vestigialis*, almost 2 lines.
 ** Abdomen rather piceous; apex of 1st segment and disc of 2nd more or less pale. - - - - 6. *graviceps*, 1 line.

A. vestigialis, Foerst., is added to the six species included in Marshall's Catalogue; we have a specimen bred by Mr. Champion from the case of *Coleophora solitariella*. Three species of the genus are not rare, but are likely to be generally overlooked, as, when running over low herbage or on the ground, they bear considerable resemblance to certain ants and *Staphilini*. *A. microptera* has been found in the nest of *Formica rufa* (Ent. Ann., 1861, p. 41). Here, as in the other closely-allied genera, the hemipterous form is not constant; fully-winged specimens of *A. hemiptera* are not uncommon. Further research will not unlikely prove them to be subapterous varieties of the common *Phygadeuon fumator*, or a close ally (*cf.* Ent. Mo. Mag. v. 157; and Trans. Ent. Soc. Lond., 1881, p. 151). Marshall records *A. nigrocincta*, Gr., bred from *Hybernia defoliaria*.

ORESBIUS, *Marshall.*

Reddish brown, front part of head and metathorax black; aculeus as long as the 1st segment (female). . . . *castaneus*, 2— $3\frac{1}{2}$ lines.

This fine species is described and figured by the Rev. T. A. Marshall, at Ent. Mo. Mag. iii. 194, from two specimens taken at the top of a mountain (3500 feet) near Rannoch. Dr. Sharp captured one on Goatfell, Arran (2866 feet).

THEROSCOPUS, Foerst.

A. Antennæ bicoloured, base red, apex black (females).

a. 1st abdominal segment with very projecting spiracles.

Base of antennæ, back of metathorax, apex of 1st segment, 2nd and 3rd entirely, and legs, red-yellow. - 1. *ingrediens*, $1\frac{1}{2}$ line.

b. 1st segment without or with very slightly projecting spiracles.

* 1st and 2nd abdominal segments aciculate.

Thorax, three first abdominal segments and legs more or less red.

† 2nd segment with a brown dorsal mark in front of the apex.

4. *inæqualis*, $1\frac{1}{2}$ line.

†† 2nd segment entirely red; almost the whole of this segment aciculate. - - - - 2. *essenbeckii*, almost 2 lines.

** The 1st segment only aciculate.

‡ Scutellum red; middle of abdomen and legs red.

3. *subzonatus*, $1\frac{1}{4}$ line.

†† Scutellum black; middle of abdomen and legs red.

5. *pedestris*, 2 lines.

B. Antennæ entirely dark (female).

Almost entirely brownish black; legs brownish red; aculeus about half of abdomen. - - - - *niger*, $2\frac{1}{2}$ lines.

T. niger, Bridgm., is described at Trans. Ent. Soc. Lond., 1883, p. 152, from a specimen taken by Mr. Cameron at Kingussie. The unsatisfactory definitions of the genera of these interesting brachypterous female Cryptidæ are there commented upon; also compare Ent. Mo. Mag. v. 155. *T. pedestris* is figured by Tappes (Ann. Soc. Ent. France, 4th ser., vol. ix., pl. i., fig. 15) from a specimen bred by Rosenhauer from the case of *Cryptocephalus* 12-*punctatus*. In Vollenhoven's 'Pinacographia,' *T. cingulatus*, Foerst., *T. essenbeckii* and *T. pedestris* are beautifully figured, with details (*l. c.*, pl. 37, figs. 5-7). All the species of *Theroscopus*, whose economy is known, are doubtless hyperparasitic, as Ratzeburg distinctly states that he bred his *T. gravenhorstii* from the cocoon of *Ophion merdarius*, Gr., which was parasitic on *Trachea piniperda* (Die Ichn. i. 154). Giraud bred *T. inæqualis*, Foerst., from the galls of *Diastrophus scabiosæ*.* Hartig bred *T. pedestris*, Fabr., from *Microgaster* cocoons parasitic on *Lasiocampa pini*.* This species has also been bred from the following varied hosts:—*Psyche opacella* by Brischke, *Psyche calvella* and *Fumea intermediella* by Siebold, *Cryptocephalus* 12-*punctatus** by Rosenhauer, and *Hypera plantaginis* by Schrank.

THAUMATOTYPUS, *Foerst.*

Piceous, abdomen paler; legs piceo-stramineous. - *billupsi*, 1 line.

See Trans. Ent. Soc. Lond., 1882, p. 145.

HEMIMACHUS, *Ratz.* = PEZOMACHUS (males).

I. Neuration of wings as in Hemiteles.

- A. Abdomen more or less red, or marked with red.
 - a. Thorax more or less marked with red.
 - * Wings with distinct, but faint smoky clouds. *rufotinctus*, $2\frac{1}{2}$ lines.
 - ** Wings very clear, without any trace of colour. *albipennis*, 2 lines.
 - b. Thorax not red-marked (except a little red on the collar sometimes).
 - * Legs almost entirely red.
 - † Coxæ red, hind one occasionally stained with brown.
 - ‡ Post-petiole quadrate; spiracles of 1st abdominal segment very prominent.
 - Base of antennæ, middle of abdomen and legs red. *ovatus*, $2\frac{1}{2}$ lines.
 - †† Post-petiole elongate.
 - § Base of antennæ red.
 - Legs entirely red; collar red, or red-marked.
 - × Metathorax with posterior transverse line.
 - o 3rd segment of abdomen black. - - *hyponomeuta*, $2\frac{1}{2}$ lines.
 - oo 3rd segment more or less red. - - - *rufipes*, 2 lines.
 - × × Supero-medial area faintly defined.
 - §§ Antennæ black. - - - - - 3. *fasciatus*, $1\frac{3}{4}$ line.
 - †† Hind coxæ black; apex of 1st and margins of 2nd segment of abdomen yellow-red.
 - Supero-medial area of metathorax transverse. - *zonatus*, $2\frac{1}{3}$ lines.
 - ** Greater part of hind legs black.
 - + Coxæ, especially the hind ones, black; abdomen elongate.
 - Incisions of 1st and 2nd segments distinctly red.
 - ++ Metathorax short, with only the posterior transverse ridge, and that obsolete in the middle. - - - *confusus*, $1\frac{3}{4}$ —2 lines.
 - ++++ Metathorax of ordinary length, with indications of a supero-medial area, subquadrate or elongate, more or less distinct.
 - rufocinctus*, Ratzeburg, $1\frac{1}{2}$ —2 lines.
 - + + Coxæ red. - - - - - *vagans*, $1\frac{1}{2}$ line.
- B. Abdomen black.
 - Greater part of legs piceous red. - - - *piceus*, $2\frac{1}{2}$ lines.

II. Neuration of wings imperfect beyond the outer transverse cubital nervure; insect more or less pale piceous, head black.

A. Head much larger than the thorax.

annulicornis, Marshall MS. ? = *juvenilis*, 1 line.

B. Head of normal size. - - - - - *anthracinus*, $1\frac{1}{2}$ line.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

COLLECTING IN SURREY.—Accompanied by Mr. W. H. Wright I went, during the second week in June, into the western portion of Surrey, where heather and fir obtain to such an extent that in places one might easily imagine oneself again on the Highland mountains. Very different, however, was the result of a couple of days' stay in this neighbourhood to the numerous catches I had used to take with similar surroundings in Perthshire. One would hardly have believed it possible to have worked steadily, as we did, during the period we were there with such scanty results. The season is undoubtedly singularly backward, which may to some extent account for our ill-luck. On the evening of our arrival we sugared a most likely-looking locality on the edge of a large fir wood, and adjoining a fine tract of heather, with some amount of cultivation near. Having sugared about a hundred trees we amused ourselves by searching for moths which should, under ordinary circumstances, be found at rest on the trunks of the firs; but with the exception of a few *Scoparia ambigualis* and a single *Macaria liturata* nothing was found. Later on at sugar one *Tinea finistrella* and one *Agrotis exclamationis* were the only representatives of the great order Lepidoptera. Such bad success has seldom fallen to our lot, and considering that the evening was everything to be desired, viz. dull and warm, I can only attribute the scarcity of species either to the backwardness of the season or to the bad series of years which we have had lately. We can but infer that the moths have become partially exterminated, or that they have not had time to recover their normal numbers. On the wing almost as few species appeared, and even *Fidonia atomaria* was but thinly represented. *Emmelesia albulata* and *Thera variata* appeared, but in small numbers, as did also *Pterophorus polydactyla*, the latter looking very little the worse for its hybernation. *Xylophasia rurea* was represented by half a dozen specimens; and the small Geometræ, such as *Iodis lactearia*, *Panagra petrarica*, *Heliothis marginata*, and *Eupithecia nanata*, were few and far between. In fact nothing in the evening can only be said to have been a total failure, as twenty minutes sometimes elapsed without seeing a single specimen. The species taken of exceptional interest were *Lobophora*

sexalata and *Aspilates strigillaria*, and a curiously marked odd-sided specimen of *Melanippe subtristata*, on which all the markings on one side were blended into a series of fine lines, which at first sight appeared to be an effacement of the scales. During the hot sunshine of the second day *Fidonia atomaria* was the only species found among the heather, while *F. piniaria* was to be seen flitting around the fir trees, being the only moth which appeared in anything like abundance. The second night's sugaring was nearly as blank as the previous one, half a dozen moths of the species already enumerated only appearing, with the addition of *Phlogophora meticulosa* and a single specimen of *Agrotis porphyrea*.—JOHN T. CARRINGTON; Royal Aquarium, June 24, 1883.

LEPIDOPTERA IN THE NORTH OF ENGLAND.—We find Lepidoptera exceedingly scarce this season in the North, the commoner species in some instances being quite absent. I recently sugared near Penrith, but with very poor success, three or four *Xylophasia rurea* alone appearing in one evening. The weather has been very cold, but it is to be hoped that the latter part of the season will be more profitable for the entomologist.—W. PREST; Holgate Road, York.

LEPIDOPTERA NEAR EDINBURGH.—Having seen in the 'Entomologist' accounts from different parts of the country, all, with one or two exceptions, complaining of the general scarcity of Lepidoptera, I thought that a few notes on the insects taken last year in this locality might be of some interest. Diurni were very scarce, the following only being taken, viz. *Pieris brassicæ*, *P. rapæ*, *Vanessa urticæ*, and *V. atalanta*. Moths were more numerous, both in numbers and species. Of Bombyces 4 species were taken, of Geometers 11, Noctuæ 30, and a number of Micro-Lepidoptera. At sugar *Leucania conigera*, *L. pallens*, *Miana literosa*, and *Plusia pulchrina*, were fairly common; *Triphæna pronuba*, *Xylophasia polyodon* (a perfect nuisance), and *P. gamma*, came in crowds; *Caradrina cubicularis* and *Apamea oculea* were also common. These, with a specimen each of *Hecatera serena* and *Heliophobus popularis* (bred), were the best insects taken. Two Geometers only were common, viz. *Camptogramma bilineata* and *Pelurga comitata*. In the garden were taken larvæ of the following species:—*Pieris rapæ*, *Mamestra brassicæ*, and *Hadena oleracea*, on cabbage; *Chelonia*

caja, on apple; *Acronycta psi*, on apple, pear, cherry, and hawthorn; *Rumia crataegata*, on apple; and *Phlogophora meticulosa*, on plum.—A. E. J. CARTER; Joppa, N.B., May 22, 1883.

LEPIDOPTERA NEAR WINCHESTER.—It may be of interest to note the fact that the variety *valezina* of *Argynnis paphia* was taken here last year. A white variety of *Polyommatus phleas* was taken at the same time. As regards last season at Winchester, we seem to have been more fortunate than many other districts. *Argynnis euphrosyne*, *A. selene*, *A. paphia*, *A. adippe*, *Lymanitis sibylla*, *Hipparchia semele*, occurred in plenty. *Nemeobius lucina* and *Lycæna alsus* occurred less commonly, while *Thecla quercus* was extremely plentiful. *Apatura iris* was seen, but not taken. Among Heterocera—*Smerinthus populi*, *Zygæna filipendulæ*, *Lithosia rubricollis*, *Callimorpha dominula*, *Chelonia plantaginis*, *Rumia crataegata*, *Euclidia mi*, *E. glyphica*, *Pygæra bucephala*, *Apamea oculatea*, *Cidaria fulvata*, &c., were common. Other captures were *Chærocampa porcellus*, *Liparis monacha*, *Boarmia roboraria*, *Eurymene dolabraria*, *Aretia mendica*, *Lasiocampa quercifolia*, *Orgyia pudibunda*, *Geometra papilionaria*, *Cidaria picata*, *Anaitis plagiata*, *Dicranura vinula*, *Phlogophora meticulosa*, *Anarta myrtilli*, &c. I have been unable to get information as to most of the Nocturæ.—B. TOMLIN; The College, Winchester, May, 1883.

VARIETY OF *HEPIALUS LUPULINUS*.—On May 24th I captured the following variety of *H. lupulinus*:—The fore wings are white, with a broad tawny border on the costal margin; there is a band of the same colour on the outer and hind margins, but not so broad as that on the costal margin. The moth very much resembles the male *H. humulus*, except that the size is that of *H. lupulinus*: the hind wings are smoke-coloured, and the borders round the wings, which in *H. humulus* are very narrow, are in this specimen much broader, that on the costal margin occupying almost a third of the breadth of the whole wing; the head and thorax are tawny, as in *H. humulus*. The specimen was taken at the foot of a concrete and plaster wall, having recently emerged from the pupa, and affords a good instance of that faculty of protective resemblance so common amongst insects.—GEO. F. ADAMSON; Mavis Bank, Croydon.

ABUNDANCE OF *ODONESTIS POTATORIA*.—I have noticed that there has been an unusual abundance of the larvæ of *Odonestis*

potatoria this spring, in this neighbourhood. I should like to know whether this is owing to the mild winter.—A. SAKER; Stoat's Nest, Coulsdon, Surrey.

[There is little doubt that the mild winter has had much to do with the abundance of *O. potatoria*, which appears to be general.—ED.]

ERASTRIA VENUSTULA.—In the year 1860 I had a number of eggs of this species laid by a pill-boxed female taken in Epping Forest. These hatched in due course, and fed up freely on the flowers of *Tormentilla reptans*. Unfortunately I made no notes at the time, but as far as I can remember the only trouble I had with them was to get them fresh food. When nearly full-fed I gave some to the late Mr. E. Newman for description. My larvæ were kept in a well ground jam-pot, from which there was no possibility of escape; but day by day they “grew small by degrees and beautifully less,” until there was one only left. This “last of the Mohicans” constructed a small cocoon just beneath the surface of some dry sand I had placed in the jar, and emerged the following May a small but bright-coloured specimen. The cocoon and pupa-skin I mounted on card, and gave them to Mr. Newman. It did not strike me until too late that they were of cannibalistic proclivities; and I should imagine that in a state of nature they gave each other a wide berth, and for that reason would, I think, be very hard to find by searching for, as the food-plant, *T. reptans*, is so widely distributed where they occur.—C. S. BIGGS; 3, Stanley Terrace, West Ham Park, E., June 20.

FOOD-PLANT OF ERASTRIA VENUSTULA.—There is, I think, very little doubt about *Potentilla tormentilla* being the natural food-plant of *E. venustula*. This moth was first bred in England in the year 1859–60 by my friend Mr. Henry Nicholls, who captured some specimens in the old Epping locality, which laid some eggs in the pill-boxes in which he carried them home. As nothing was then known regarding the life-history of the insect, and wishing to breed it, he was obliged to resort to the usual practice of collecting those prominent plants growing in the vicinity of the insect's habitat. As *P. tormentilla* was one of the most conspicuously common plants there it was selected, with many others, for trial. From those offered to it, it was found that the young larvæ selected *P. tormentilla*, and of that the flowers

only. This food was of course afterwards supplied to them exclusively, and on it Mr. Nicholls reared the first bred example in this country. I, too, some years after, viz. in 1877, successfully bred the insect from eggs which I obtained from the St. Leonard's locality. I fed them, likewise, on the flowers of the above-named plant until they were nearly full-fed. Leaving home about this time for four weeks, at Deal I found it inconvenient to get this food, and substituted the flowers of *P. anserina* and those of bramble, both of which they took to readily, and in due time pupated, and five specimens emerged. Of course bramble grows quite as plentifully at Epping as at St. Leonards, yet I am quite of opinion that *P. tormentilla* is their natural food. That Mr. Scott should have failed to find any larvæ feeding upon it is not surprising, for when they are young they are most difficult to see, and that even when you are certain that they are there. Even when full-fed they are easily overlooked, for then they have a habit of falling to the ground upon the least disturbance, where their colour renders them most difficult of detection. The plant being of such a short growth makes it almost impossible to beat for them, and to search will be indeed a work of patience. —W. H. TUGWELL; Greenwich.

FOOD PLANT OF ERASTRIA VENUSTULA.—Dr. Rössler, in his 'List of the Lepidoptera of Nassau' (1866), states, that according to Lederer the larva feeds on the bramble, *Rubus fruticosi*. Both the genera, *Rubus* and *Tormentilla*, belong to the order Rosaceæ, which may account for the fact of the larva of *Erastria venustula* feeding on *T. reptans*, when supplied with the plant in captivity, although *R. fruticosus* may be its natural food-plant.—ALFRED SICH: Burlington Lane, Chiswick, June 22, 1883.

TORTRICES IN MAY.—On Easter Monday I took a ramble through the woods near Maidstone, but saw no insects, either on the trunks of the trees or on the wing, but I succeeded in finding some pupæ of *Retinia turionana* in the centre shoots of *Pinus sylvestris*, from which I reared sixteen specimens; they emerged towards the end of April and early in May. I was pleased to meet with this species again, having searched for it in vain for many years past. In April last I collected a quantity of the stems of *Stachys sylvatica* in Epping Forest, from which I bred eighteen beautiful specimens of *Ephippiphora nigricostana* in May. *Pyrodes rhediana* was tolerably common on Fair Mead

Bottom, Epping Forest, in the middle of May. I secured about three dozen in a short time by beating the hawthorn.—WM. MACHIN; 22, Argyle Road, Carlton Square, E., June 20, 1883.

WOOD-BORING COLEOPTERA.—E. A. Schwarz, of Washington, makes the following observations in the 'American Naturalist':—"There are many Coleoptera of various families which live in the galleries made by other species in the hard wood of trees. Thus the galleries of *Mallodon* and other large Cerambycidae form the home of many other species after the original owner has left them. If these inquilines are much smaller than the maker of the gallery, there is, of course, no difficulty in recognizing them as inquilines that did not make the gallery themselves. If, however, they are nearly of the same size as the original burrower, it is difficult to decide whether or not the galleries they inhabit have been made by them. Thus Mr. Eichhoff, in his excellent work on European Scolytidae, suspects that the genus *Platypus* uses the galleries made by other beetles. My own experience in the South, with the common *Platypus compositus* is as follows:—When found in the thick bark of pine stumps the larvæ doubtless bore themselves, as there is no other beetle found in their company which makes such smooth and straight galleries. If, however, they occur in hard wood, such as oak, hickory, hackberry, &c., the case appears to be different, and seems to confirm Mr. Eichhoff's statement, as I found them always associated with true boring insects, viz., *Colydium lineola* and *Sosylus costatus*. The galleries of these three species are undistinguishable, and it appears to me very probable that *Platypus* simply uses the old galleries made by the two Colydiid beetles just mentioned. The Histerid genus *Teretrius* is another instance of this sort where the inquiline can be readily mistaken for the maker of the gallery, but in this case the *Teretrius* is simply parasitic on *Ptilinus* and other boring insects. I would also call attention to the fact that Professor Riley discovered the larva of *Hemirhipus fascicularis* to be parasitic on *Cyllene picta*, in whose galleries it was living. As the two species are of about the same size, the *Hemirhipus* might be taken for a true wood-borer. Another observation bearing upon this subject I had recently occasion to make in a street in Washington, D. C. There was an old maple tree perforated on one side with numerous holes, made, I presume, by an *Elaphidion* or some other average-sized Cerambycid. The

burrows had evidently long since been deserted by the original makers, but I saw protruding from four or five of them the heads of *Strongylium tenuicolle*. Upon investigation I found that the beetles had died in the vain effort to escape from the gallery, the entrance being much too small to let the body pass through. Now I know by experience that *Strongylium* is not a true boring insect, and lives only in the very soft wood of decaying trees, especially of oak. It appears to me probable, therefore, that the parent *Strongylium* had laid eggs at the entrance of a gallery made by a species smaller than itself, and that this mistaken instinct resulted in the death of its progeny in the manner just described."

APANTELES FRATERNUS Rhd.—It may be interesting to the readers of this Magazine to know something of this new British species. I bred it on the 20th September, from *Aspilates citraria*. The cocoons are formed on the same plan as those of *Microplitis alvearia* (Entom. xiii. 244), and the larvæ protected them in the same manner. After the escape of the flies I removed a thin slice, with a sharp knife, from one side of the batch of cocoons, to enable me to see how the cocoons were placed; the bottom consisted of eight, and eight were resting on these; the others above were not in such regular order, from the circumstance that eight appeared to have been placed in the second tier instead of seven; the batch consisted of twenty-seven cocoons; those in the centre were more or less pentagonal, and in general appearance looked like a piece of miniature honeycomb; the nest of cocoons was 7 mm. in length and $2\frac{1}{2}$ in height. *Microgaster flavipes* forms a similar cocoon and infests *Boarmia repandata*. It would be interesting to record what others pupate in this manner.—G. C. BIGNELL; Stonehouse, Devon.

[Of this species Dr. Reinhard says (Berl. Ent. Zeits. xxv. 47), "the yellowish white cocoons, to the number of 100 or upwards, are spun together in the form of a honeycomb in a very neat manner, with the long base of the comb attached to a thin twig or stem. There are many specimens of these cocoons in the Vienna Zoological Museum, collected by Rogenhofer in the neighbourhood of Vienna, from which this species had emerged. The holes in the cocoons from which the imagos had emerged occurred partly on the upper side of the comb and partly on the under side. The host, in which this *Apanteles* larva was

parasitic, is unknown. A similar arrangement of the cocoons occurs in *Microgaster alvearius*, Spin., and *M. flavipes*, Hal. (cf. Ruthe, Berl. Ent. Zeits. iv. 153), and in the *Ichn.* (*Microgaster?*) *alvearifex* described by Schrank (Enum. ins. Austr. p. 378). Réaumur was also familiar with similar cocoons, which he has described and figured (Mém. II. ii 233; pl. 37, figs. 7, 8). Of *M. flavipes*, Hal., Brischke says, "bred from the larvæ of *Boarmia repandaria* and *viduaria*. Cocoons whitish grey, with the long side regularly stuck together, spun round with brownish grey wool, mostly in the shape of a small half cheese;" and of *A. fraternus*, Rhd., "cocoons as in *M. flavipes*, but lighter." (Schrift nat. Gesel. Danzig v. iii. 131-2). *Microgaster minutus*, Rhd., commonly parasitic on *Cleora glabraria*, has a similar arrangement of its cocoons.—E. A. F.]

VISITORS TO RAGWORT BLOOM.—The following list of insects, &c., noticed on the flowers of ragwort last autumn, when searching for Lepidoptera after nightfall, may be of interest to naturalists. Of Diptera—Tipulæ, Culicidæ, Asilidæ, and other families. A few Coleoptera. Earwigs. Of Crustacea—woodlice, sand-fleas, and centipedes; one of the latter attacked a specimen of *Hydræcia nictitans* while I was watching. Also I met with a small newt and a fair sized frog perched on blossoms some 16 inches above the surface of the ground, having climbed up to so unusual a position in order no doubt, like several others in the above list, to prey on other visitors to the honeyed blossom.—J. D. V. KANE; Sloperton, Kingstown.

HAGGERSTON ENTOMOLOGICAL SOCIETY.—A Pocket-Box Exhibition of specimens was held at the Society's rooms on Thursday, June 14th, to celebrate its Twenty-fifth Anniversary. A large number of members attended, and a considerable number and variety of species were exhibited, not only by the members but by the visitors. The excellence of some of the species exhibited tended to show that interest in the work was far from falling off, and that the season was up to the present fairly productive. Most noticeable among the exhibits were the Coleoptera of Messrs. Lewcock and Cripps, which represented a vast amount of patient labour. The same may be said, perhaps to a still higher degree, with respect to the preserved larvæ of Messrs. Franklin, Southey, and Raine. Over one hundred species were

shown, some of them very well done, and forming an exceedingly useful and instructive exhibit, and much calculated to further the cause of Entomology, as it is in this branch of the study that many of us are wanting in knowledge. Mr. Pearson exhibited specimens of Lepidoptera, Coleoptera, Neuroptera and Diptera, many of them of some considerable value. Among Lepidoptera the fine series of *Angerona prunaria*, shown by Mr. Hockett, containing four varieties, all of which were bred early in June this year, were worth seeing. Also *Erastria venustula*, captured on June 10th, this year. Mr. G. A. Clarke exhibited *Eupithecia jasioncata*, *Pachnobia alpina*, *Agrotis cinerea*, and *Toxocampa cracca*. A fine variety of *Teniocampa munda* was exhibited by Mr. D. Pratt, and Mr. H. Bartlett showed a very fine series of *Clostera reclusa*, also *Cryptoblabes bistrigella* and *Eupithecia subumbrata*, and many others of lesser interest. Mr. Cartwright's fine specimen of *Notodonta trepida* was much admired. The same gentleman showed also *Stauropus fagi*, captured this year in Essex. Mr. May's *Diphthera orion* were very good, as also were his *Melanippe hastata*, equalled but hardly surpassed by those of Mr. W. Harper, among which were some nicely marked varieties. Also some *Amphydasis betularia* by the same exhibitor. The graceful setting of Mr. C. Boden's *T. gracilis*, *C. bistrigella*, *Epippiphora nigricostana*, and other species, coupled with a fine variety of *T. gracilis*, formed a very satisfactory exhibit. The *N. chaonia*, *D. furcula*, *M. hastata*, *Scotosia undulata* and others, shown by that indefatigable entomologist Mr. Henry Jobson, were looked upon with much favour, and were evidence of much patient labour. Other gentlemen, among whom were Messrs. Gates, Barry, Gurney, Sheldrake and Russell, also exhibited many species of more or less value.—R. G. BURRY.

EAST LONDON ENTOMOLOGICAL SOCIETY. — At a meeting of the East London Entomological Society, on the 13th June last, Mr. Upton, of 353, Southwark Park Road, exhibited a nearly full-fed larva of *Boletobia fuliginaria*, which will be more fully described on a future occasion. The same gentleman has captured several specimens of the perfect insect in former years, but this is the first occasion of discovering the habits of the larva, which he has succeeded in rearing to its present stage on a species of fungus.—D. PRATT; East London Entomological Society, 333, Mile End Road, June 19, 1883.

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VARIATIONS IN THE COLOUR OF LEPIDOPTERA.*

BY J. JENNER WEIR, F.L.S., F.Z.S.

IN no order of insects has so much importance been attached by entomologists to the mere colouring of the species as in the Lepidoptera. The reason of this is not far to seek, for the wings of butterflies and moths are, as a rule, larger in proportion to the size of the body than is the case in any other order of insects; and further, the markings of the great majority are singularly invariable specifically, and the same character of markings obtains often over the whole of the genus, and even family, to which the species belongs.

Many of the species of butterflies are so constant in their markings and coloration that a variety, or even slight aberration, is rarely to be found. The common peacock butterfly, *Vanessa io*, is remarkably invariable in colour and markings; thousands might be taken before the most trifling deviation from the normal type could be found. This is true also of the red admiral, *Pyrameis atalanta*; the painted lady, *P. cardui*; and numerous other species.

On the other hand, particularly amongst the moths, some species are so truly polymorphic that it would be difficult to decide which coloration was the typical or normal one, scarcely two specimens being found to be absolutely similar. Two of the *Cidariæ*, for instance, viz., *Cidaria russata* and *C. immanata*, are very variable in their colours; and *Peronea cristana* has even a wider range of variation.

Within the limits of the word variety, as used amongst lepidopterists, several widely different conditions of variations of

* A paper read before the West Kent Natural History, Microscopical, and Photographic Society, 22nd November, 1882. Communicated by the author.

colour are embraced, and it is the object of this paper to classify these conditions, and to give greater precision to the use of the word.

Variations in the colour of Lepidoptera either from the normal type, or in the case of polymorphic species, from each other, may be placed under at least twelve different classes, and the table following will show the divisions under which I propose to deal with the subject.

TABLE OF VARIATIONS IN THE COLOUR OF LEPIDOPTERA.

Aberrations, or Heteromorphism.—White: Albinism. Pallid: Xanthism. Black: Melanism. Sports: Heteropœcilism. Females coloured as males: Gynandrochromism. Both sexes in one individual: Hermaphroditism.

Constant Variations, or Orthopœcilism.—Variable species: Polymorphism. Local variations: Topomorphism. Reversion: Atavism. Two static conditions: Dimorphism. Three static conditions: Trimorphism. Seasonal variation: Horemorphism.

It will be seen from the table above that I divide the twelve classes into two sections, six classes in each. The first includes mere aberrations, and the second variations of constant occurrence. To the first section I give the name of Heteromorphism, and to the second that of Orthopœcilism.

The six heteromorphic variations are more of the nature of what gardeners call "sports," and in the natural state do not, as a rule, form permanent varieties or races, although by careful selection in confinement some of them may be perpetuated.

The six orthopœciliæ variations are of constant occurrence, and in a state of nature form permanent variations either of a local, seasonal, or other character.

I do not contend that these twelve classes are sharply separated from each other, but, on the contrary, there are some variations to be met with that might with equal propriety be placed in more than one of the classes.

I shall now consider the twelve classes separately:—

ALBINISM.—A pure albino amongst the Lepidoptera is very rare, and my cabinet contains but one specimen, viz., *Eusebia bipunctaria*. This remarkable specimen I took myself at Lewes. The only other albinos I have seen were captured in the Island of Lewis, in the Outer Hebrides. They were so frequently met

with there, in the case of *Emmelesia albulata*, that I proposed for them the specific name of *Hebudium*. Partial albinism occurs not unfrequently in *Satyrus janira*, the colour being absent from one or more of the wings, producing white patches.

XANTHISM.—In this class I place all those aberrations of colour which assume a pallid appearance over the whole extent of the wings. I illustrate this condition by three remarkably light yellow varieties of *Cœnonympha pamphilus*, one of *Satyrus semele*, one of *Cœnonympha davus*, and one of *Polyommatus phlœas*, and on the under side of *Satyrus hyperanthus*. Xanthism is also found occasionally in the genus *Anthrocera*, especially in *A. filipendulæ*, the spots on the wings being sometimes yellow instead of red. Many more instances of Xanthism might be given. The most remarkable case I ever saw was that of *Pyrameis cardui*, where the two wings on one side were normal, on the other xanthic.

MELANISM.—Pure melanism is rare amongst Lepidoptera, and I think it is found only in those species where black obtains in the markings, and it really consists in the diffusion of the black over the whole of the wings. I illustrate this condition by melanic specimens of *Biston betularia*. This, commonly called the peppered moth, has usually a white ground colour to the wings, with small black spots; but it has been found in the North of England entirely black, and I believe this melanic variety has been perpetuated in confinement by careful selection. I have seen almost melanic varieties of *Abraxas grossulariata*, and partial melanism is common in that species. Several of the Geometridæ and Noctuidæ are found more or less melanic in the northern parts of England and in Scotland. *Dianthœcia conspersa* is a good illustration of this darkening of colour in northern specimens; many, more or less suffused with black, have been captured.

HETEROPECILISM.—In this class I place mere sports, which may occur once or twice, and perhaps never be found again. I illustrate this by two specimens of *Satyrus hyperanthus* from the New Forest, one captured by myself. In these two insects the ordinary round spots on the under side of the wings are changed into lanceolate markings. I have also two specimens of *Cœnonympha davus* with similar lanceolate, instead of round, markings, both on the upper and under side of the wings. The aberration

in the case of *S. hyperanthus* would probably be a disadvantage to the insect, as the usual round spots on the under side of the wings resemble very closely the oak spangles, so that the imago, when at rest with closed wings, would more easily escape being detected by birds.

GYNANDROCHROMISM.—In this class I place those aberrations in which, the two sexes being generally of different colours, the female is more or less of the colour of the male. *Odonestis potataria* is usually of a buff colour in the female, and dark brown in the male. I have a specimen in which the female is precisely of the colour of the male. This was taken in the New Forest, and I have seen many others. In the genus *Lycæna* the males of several species are blue, and the females brown or blackish. In specimens of the female of *Lycæna icarus*, of which I have a score or more in my cabinet, the females have the wings more or less of the blue colour usual in the male. This occurs also occasionally in *L. adonis* and *L. corydon*. This assumption by the female of the colour of the male is found in several species of Lepidoptera.

HERMAPHRODITISM.—I have found this a very rare condition of Lepidoptera, and have never taken one myself. When it does occur the wings and antennæ on one side are often coloured and formed exactly as in the male, and on the other side as in the female. It has been found in *Lycæna icarus*, in which case the peculiarity is very marked, as the wings on one side are blue and on the other brown. The insect indeed appears equally divided down the middle of the head, thorax, and body, into the two sexes. Hermaphroditism occurs also in varying proportions. I have observed it in *Satyrus semele*, and in some moths. It is found more frequently amongst hybrids, and has been observed in those between *Smerinthus populi* and *S. ocellatus*. Occasionally the wings of hermaphrodites appear as if quartered, the upper right wing and the lower left being of one sex, and the left upper and lower right *vice versa*.

I now pass on to the Orthopæcic sections:—

POLYMORPHISM.—The most remarkable species amongst the British Geometridæ illustrating this condition are the two allied *Cidariæ*, *Cidaria russata* and *C. immanata*. The variation is, I think, greatest in the former species. *C. russata* has the broad central bar of the upper wings either black, brown, red, or grey,

and in some cases nearly white. Specimens are occasionally found suffused almost entirely with black, and the relative proportions of the colours varies considerably. It would be impossible to say what is the normal colour in this species. I find that in the Outer Hebrides and in the Island of Arran the coloration is much more uniform, the general appearance of all the specimens being greyish. *C. immanata* varies in a similar manner, except that only in the Shetlandic specimens have I seen any tendency to red in the centre of the wing. *Peronea cristana* varies from almost black to nearly white, and the tufts in the wings vary in colour from black to red, yellow, or white. The same difference also obtains in the shoulder markings, and in the dashes on the inner edges of the wings. Several others of the *Peronea* differ in an equally remarkable manner amongst themselves, whilst one species, on the other hand, is very constant in colour in this country.

TOPOMORPHISM.—I place under this class all local variations. These may be sufficiently constant as to admit of being considered subspecific or racial; and in certain districts the variation appears to take place in response to the geological environment. In the British Isles the most remarkable topomorphic variation is that of *Hepialus humuli*. This species which, so far as I am aware of, in England and Scotland has a silvery coloured male, and a buff female with a few reddish markings; but in the Shetland Isles it appears to be subject to many variations, the colouring of the sexes being reversed, both in the case of males and females, and some varieties being more melanic; so that the *Hepialus humuli* of those islands has been raised to a subspecific rank, *Hethlandica*, by Staudinger; and as well as being topomorphic is also truly polymorphic. In the Outer Hebrides *Boarmia repandata* departs from the normal coloration of that species as found in England, viz., various shades of brown, to a prevailing slaty grey, with darker markings. To this well-defined topomorphic variation I have ventured to give the name of *Sodorensium*. As an instance of a topomorphic variety dependent apparently on the geological environment, I know of no better example than that of *Gnophos obscuraria*. This insect on the chalk downs, near Lewes, is found almost white with dark markings, and of a light grey ground colour with darker markings; but on the peaty soil of the New Forest I have taken it in plenty of a very dark grey colour, in

some instances nearly black. Specimens obtained in limestone districts are of a brownish grey colour.

ATAVISM.—In this class I place all variations which show a tendency to reversion to what I conceive to be a common ancestor. Of this I have a few illustrations in my cabinet, and singularly in that usually remarkably invariable species, *Vanessa io*. Several of the *Vanessidæ* have a row of blue spots on the margin of the wings; these are well seen in *Vanessa urticae*, *V. polychloros*, *V. antiopa*, and several foreign species. In *V. io* the blue marginal spots appear to be concentrated in the under wings into two large circular patches; but by careful examination of specimens, taken by myself in the New Forest, I find some have on the lower wings small blue spots in the dark colour beyond these patches, which, to my mind, are evidently traces of the row of blue spots which in *Vanessa io* have become differently arranged. In the *Larentidæ*, a family commonly known as carpet-moths, the bulk of the species have a well-defined broad central bar; but this is more or less broken in some species, yet amongst them it is not unusual to find one with the centre bar well defined. This I take to be a case of reversion to the markings of a common ancestor. *Cidaria corylata* in the normal form has the bar interrupted; but I have a specimen in which it is as complete as is typical of the genus. In *Melanippe hastata* the bar is usually interrupted; but I have one in which the bar is complete. *Melanthia rubiginata* has usually only the commencement of the bar at the costal edge of the wings, but frequently traces of the obliterated bar are found on the inner edges of the wings.

DIMORPHISM.—In this class I place all those insects which have two well-defined types of colour, generally without intermediate variations being found. The best type of this class found in the British Isles is *Argynnis paphia*, and its dimorphic female form *Valezina*. In this case the normal coloration has red for the ground colour of all the wings, but in *Valezina* the ground colour is green. Although I have spent many days in the New Forest in the observation of this species, I have never found a female of this insect which is other than either *Argynnis paphia* or *A. valezina*, yet I have found a green shade somewhat pervading the female of the former to greater or less extent. In *Clisiocampa neustria* dimorphism is well pronounced. I have both males and females of a yellowish buff, and of a dark brown colour. *Colias*

edusa and *C. hyale* are both dimorphic in the female sex. Some of the females of the former are red and some yellow; and of the latter some are yellow and others white, or nearly so.

TRIMORPHISM.—Trimorphism in butterflies is not found in England, but attention has been drawn to it by Mr. A. Russel Wallace in the case of certain species of *Papilio* inhabiting the Austro- and Indo-Malayan Archipelago. *Papilio pammon*, *P. theseus*, and *P. ormenus*, are all trimorphic in the female sex.

HOREOMORPHISM.—In this class I place all those Lepidoptera which appear twice a year, and with such a difference in their coloration that in many cases they have been held to be distinct species. The best illustration of this, found in Great Britain, is *Pieris napi*: this insect appears in May and June, and again in July and August. The males of the spring emergence are almost white on the upper side, and the under sides of the secondary wings have their venations densely irrorated with dark grey. The females on the upper side have the venations of the wings densely irrorated with grey on a whitish ground, and the under sides strongly suffused with the same colour, denser at the sides of each venation. The males of the summer emergence have well-defined larger or smaller subapical black spots on the upper wings on a pure white ground, the sprinkling of grey near each venation on the under side being much less than in those of the spring emergence. The females have a pure white ground colour to all the wings on the upper side, and the venations are well defined with black edgings; on the under side the irrorations on the edges of the venations are very much less pronounced. It appears, from the researches of Dr. Weisman, that whether the insect presents the coloration of the spring or summer emergence depends entirely on the time it remains in the chrysalis. The butterflies which appear in spring have spent the winter in the chrysalis state; these lay eggs in June, which pass through all the stages of egg, caterpillar, and chrysalis states in a few weeks, appearing as perfect insects in the summer, but in the form of the summer emergence. Now Dr. Weisman has found that if the chrysalis, which in ordinary course would produce the summer emergence form, are prevented from developing by being placed for a sufficient time in the cold, say in an ice-safe, they appear with the coloration of those of the usual spring emergence, or, in other words, in nature, A produces B, B A, and so on; but

when thus retarded A produces A, entirely skipping B. The hypothesis of the learned Doctor was that both forms were descended from *Pieris bryonia*, an alpine single-brooded form, which perhaps existed over Europe during the glacial period (this species is very much darker than even the British spring form of the insect); that, as the climate became ameliorated, the insect gradually acquired the double-brooded habit, and at the same time became seasonably dimorphic, or, as I term it, horeomorphic. He then proceeded to test the truth of this hypothesis by forcing the insect back to its old condition of single-broodedness, and with the result that the form, that of the summer emergence, least like *Pieris bryonia*, was eliminated. All this is well set forth in Mr. Raphael Meldola's translation of the Doctor's work on this very interesting subject. Some of the British species of *Ephyra* and *Ennomos* amongst the moths, and of *Lycæna* and *Polyommatus* amongst the butterflies, are horeomorphic. *Ennomos illustraria* is horeomorphic; and it has been observed that out of one brood some of them will appear in the summer in the form of the summer emergence, whilst others remain in the pupa state all through the winter, and appear the next spring with the characteristics of those of the spring emergence. Other species of the genus *Ennomos* are equally marked in their horeomorphism. This is perhaps the most interesting of all the forms of variation to which I have adverted. It is known to occur in several European butterflies. *Araschnia prorsa* has its horeomorphic form *levana*, and its intermediate form *porima*. In America it occurs in a true *Papilio*. Mr. Edwards, in his 'North American Butterflies,' gives an account of exceedingly interesting results he had obtained in breeding this insect, known under the names of *Papilio ajax*, *P. telemonides*, and *P. marcellus*. This is a very complicated case, dimorphism and horeomorphism existing in the same species. Mr. Edwards uses the old name of *P. ajax* to include all the variations; *P. walshii*, and its subvariety *P. abbottii*, for the spring emergence, and retains the name of *P. telemonides* for the intermediate form, and that of *P. marcellus* for those of the summer emergence.

In conclusion I have to add that in each of the classes I could have given many more instances of the different conditions of variation, but I have restricted myself to a few cases only, which I deem sufficiently marked to illustrate the subject.

MEMORANDA ON INSECTS IN THEIR RELATION TO FLOWERS.

BY ROBERT MILLER CHRISTY.

(Concluded from p. 150.)

39.—June 5, 1882. A garden at Chignal. Watched the movements of a small and very undecided humble-bee. First it hovered over a large *Mimulus*, then over 8 or 9 flowers of yellow *Nemophila*, about as many of musk, took a long flight, returned, hovered over *Nemophila*, took another flight and hovered over *Lonicera periclymenum*, returned and hovered again over *Nemophila*, then visited 4 flowers, afterwards hovering over *Mimulus*, musk, and double red rose.

40.—June 10, 1882. Garden at Writtle, near Chelmsford. A humble-bee was seen to visit several white flowers of *Digitalis purpurea*, which it left and went to red *Antirrhinum majus*, hesitated, left it, but returned directly and visited several flowers.

41.—Same date. Meadow at Chignal. A smallish black humble-bee, orange-red behind, visited *Trifolium pratense* twice, *Lotus corniculatus* once, *Trifolium pratense* again once, and was then lost. It passed over *Chrysanthemum leucanthemum*, a *Hieracium*, a small *Rumex*, *Stellaria media*, &c.

42.—June 12, 1882. Same place. A small striped humble-bee was seen to hover over, but reject, *Chrysanthemum leucanthemum* and *Trifolium pratense*, but afterwards to visit 12 heads of *Trifolium repens*, and then 11 of *Trifolium pratense*, afterwards being lost.

43.—June 20, 1882. A small striped humble-bee was seen to visit in the following order the flowers of *Digitalis purpurea* :— 8 which were purple, 2 which were white and grew close by, and then 5 more of purple previously visited, avoiding other species around.

44.—July 3rd, 1882. Alpine Meadow, St. Moritz. A large black humble-bee striped with yellow visited *Phyteuma orbiculare* 8 times, and was then lost, having passed over, but not visited, *Veronica chamædrys*, *Chrysanthemum leucanthemum*, *Lychnis diurna*, *Ranunculus* (? sp.), a small chickweed, *Polygonum bistorta*, *Cerastium arvense*, *Trifolium pratense*, *T. repens*, &c.

45.—Same date and place. A smaller humble-bee, but otherwise much the same, visited *Lamium album* over 50 times, and was then lost. At the same spot grew abundantly *Viola lutea*, *Ranunculus* (? sp.), a large umbelliferous plant and a small *Stellaria*, *Polygonum bistorta*, and *Cerastium arvense*.

46.—July 4, 1882. Meadow at Pontresina, Engadin. A great many specimens of *Argynnis selene* frequented the meadows, and I noticed that they had an especial liking for settling on the heads of *Hieracium alpinum*, which is of a copper-colour, very much the same as the insects themselves. This may, perhaps, have been a case of "natural protection," but the object seemed also to suck the nectar. I disturbed one insect settled on a flower of the above plant, and it went immediately to another of the same species. This I did eight times, and on each occasion the insect alighted again on *Hieracium alpinum*, avoiding the other species that grew abundantly around.

47.—July 14, 1882. Meadows at Sils Maria, Engadin. To-day being very hot I had many opportunities of observing the same thing just spoken of. *Hieracium alpinum* grew plentifully, but mixed with a profusion of other flowers. It was frequented by various butterflies, such as blues, coppers, copper-coloured fritillaries (with, I think, several allied species), and the insects showed their preference for *Hieracium alpinum* by directly settling on it, although I immediately disturbed them no less than 5 or 6, or even 8, times.

48.—July 16, 1882. Bank at St. Moritz. A small humble-bee which I observed was diligently visiting both red and white flowers of a *Trifolium* (? *T. hybridum*), where both (apparently of the same species) grew intermixed, with many grades of pink between. It next paid one visit to *Gentiana campestris*, and flew away.

49.—July 19, 1882. Side of Alp Nova, St. Moritz. A very small humble-bee was watched on a place where *Lychnis rupestris* grew very abundantly with some umbelliferous plants, *Chrysanthemum leucanthemum*, *Achillea millefolium*, several *Hieracia*, *Helianthemum vulgare*, *Centaurea scabiosa*, *Viola lutea*, *Cerastium arvense*, and *Euphorbia cyparissias* in lesser abundance. The bee visited *Thymus acinos* 27 times, and was lost.

50.—Same date and place. A similar bee visited *Thymus acinos* 10 times, and was lost.

51.—Same date and place. A similar bee visited *T. acinos* 6 times, and was lost.

52.—Same date and place. A similar bee visited *T. acinos* 23 times, *Lychnis rupestris* once (this flower it happened to walk over), *T. acinos* 19 times, and was lost. This bee and the last three may have been the same one.

53.—Same date and place. Near the same spot a small humble-bee visited *Medicago sativa* 20 times, and was then lost, having passed over, but rejected, *Chrysanthemum leucanthemum*, *Helianthemum vulgare*, *Campanula* (? sp.), *Sanguisorba officinalis*, *Trifolium pratense*, *T. repens*, an umbelliferous plant, *Anthyllis vulneraria*, &c.

54.—July 22, 1882. Same place as obs. No. 49. A small striped bee visited *Thymus acinos* 86 times consecutively, then 1 *T. serpyllum*, 8 *T. acinos*, 1 *Centaurea scabiosa*, 37 *T. acinos*, and was afterwards lost, having avoided all the other flowers. Thus one bee paid 133 visits to three species of flower, one of which was blue and two purplish red. One species of thyme was visited 131 times, another once, and a species of *Centaurea* once.

55.—July 24, 1882. Same place. A moderate-sized totally black humble-bee visited *Thymus acinos* 34 times, and was then lost, it having avoided all the other flowers.

56.—July 26, 1882. Pine Forest, near St. Moritz. I watched a medium-sized humble bee pay 13 visits to *Geranium sylvaticum*, one to *Trifolium alpinum*, then 12 more to the *Geranium*, when I lost him. *Rosa alpina* and a few other flowers grew around.

57.—July 28, 1882. Same place as obs. No. 49. A good-sized black humble-bee visited *Thymus acinos* 86 times, *Medicago sativa* once, *T. acinos* 4, *Trifolium repens* 1 (then hesitated at, but rejected, *Medicago sativa*), and lastly paid two visits to *Gentiana*, being afterwards lost. This insect paid 94 visits to four species of flower, two of which were blue (visits numbered 90 and 2 respectively), one white (a single visit), and one reddish (also a single visit).

58.—July 31, 1882. The wide, dry, stony bed of the Surlej torrent covered with a profusion of flowers. Watched a smallish long-bodied striped humble-bee, which was visiting indifferently two somewhat nearly allied flowers, viz. *Oxytropis campestris* and *Trifolium repens*. It visited them alternately the following number of times, commencing with the former:—7, 5; 4, 2;

2, 1; 14, 6; 1, 7; 1, 2; 4, 2; 12 (*O. campestris*), and was lost. It thus paid 70 visits to these two species, *i. e.* 45 to the one, and 25 to the other. *Anthyllis vulneraria*, *Trifolium hybridum*?, more than one blue *Vicia*, several *Hieracia*, a *Campanula*, *Erigeron acris*, *Chrysanthemum leucanthemum*, *Achillea millefolium*, *Centaurea scabiosa*, &c., grew around.

59.—Same date and place. A specimen of *Colias hyale* visited *Hieracium pilosella* twice, a common yellow *Hieracium* three times (settled momentarily on *Anthyllis vulneraria*), then one more flower of the yellow *Hieracium*, and was lost. All these flowers were yellow, of one shade or another.

60.—Aug. 4, 1882. A flower-bed, Kurplaze, St. Moritz. An individual of *Argynnidae*, viz. *A. aglaia*, visited *Thymus serpyllum* ten times, and was lost, having avoided *Thymus acinos*, *Solidago virgaurea*, *Sedum acre*, *Dianthus deltoides*, *Chrysanthemum leucanthemum*, &c.

61.—Aug. 5, 1882. Bank at St. Moritz. A medium-sized humble-bee visited *Carduus pratensis* five times and *Centaurea scabiosa* ten times (two composite flowers, both reddish purple and of the same general appearance), and was then lost, having avoided all else, though *Polygonum bistorta*, *Solidago virgaurea*, *Achillea millefolium*, *Epilobium angustifolium*, and some other flowers, grew plentifully on the same patch.

62.—Same date. Meadow at St. Moritz. A large fritillary, viz. *A. aglaia*, visited *Scabiosa succisa* twice, *Carduus pratensis* three times, and was lost. Only a few other flowers grew around.

63.—Aug. 7, 1882. Same place as obs. No. 49. A very small brisk bee visited *Thymus acinos* 28 times, *Medicago sativa* once, and was lost.

64.—Same date and place. A medium-sized bee, at work on the edge of the above flower-patch, visited *Echium vulgare* 21 times, having avoided all else. Plenty of the following flowers grew around:—*Centaurea scabiosa* and *Lychnis rupestris*, with some *Dianthus deltoides*, *Campanula pumila*, *Thymus serpyllum*, *Hieracium*, *Helianthemum vulgare*, *Thymus acinos*, &c.

65.—Same date and place. A bee of the same species paid five visits to *Centaurea scabiosa*, avoiding all beside.

66.—Same date and place. A slightly different bee visited *Centaurea scabiosa* 13 times, *Thymus acinos* 5, *C. scabiosa* 11, and was lost.

67.—Same date and place. Near the scene of the foregoing observation a moth, about twice the size of *Plusia gamma*, visited *Silene nutans* twice, *Centaurea scabiosa* once, and was lost.

68.—Aug. 14, 1882. Rocky slope, near St. Moritz. A smallish striped humble-bee paid forty-three consecutive visits to *Epilobium angustifolium*, and one to *Phyteuma orbiculare*, after which I lost him. Other flowers were not numerous around, but there were a few, such as *Sempervivum montanum*, *Solidago virgaurea*, *Campanula*, and a large umbelliferous plant.

69.—Same date and place. A bee of the same species paid twenty visits to *Epilobium angustifolium*, avoiding all else.

70.—Aug. 16, 1882. Steep rocky river-bank, near Falls of St. Moritz. A humble-bee was seen to visit *Epilobium angustifolium* thirty-four times, *Rubus idæus* once, and was lost.

71.—Aug. 19, 1882. Same place as obs. No. 68. A specimen of the Apollo butterfly paid four successive visits to *Carduus pratensis*, avoiding *Campanula*, *Solidago virgaurea*, *Scabiosa succisa*, *Dianthus deltoides*, *Achillea millefolium*, &c.

72.—Same date and place. A copper-coloured butterfly visited *Solidago virgaurea* three times, and was lost, after having hesitated at, but rejected, a plant of the same, a *Hieracium* and a *Potentilla* (twice), all these being yellow. Other flowers on the same spot were *Campanula* and *Silene* ?

73.—Aug. 22, 1882. Meadow at St. Moritz. An individual of *Argynnis lathonia* visited consecutively twenty-seven flowers of *Viola lutea*, taking, however, several considerable flights between some of the visits. Other flowers on the same patch were *Lychnis diurna*, a small *Veronica*, and a hop trefoil.

74.—Aug. 23, 1882. Mountain side over Roseg glacier. A medium-sized black humble-bee, yellowish behind, visited *Trifolium repens* twelve times, avoiding all else, though plenty of *Parnassia palustris* grew around, with some *Achillea millefolium*, *Hieracium*, *Aconitum napellus*, &c.

75.—Oct. 1, 1882. Garden at Chignal. A specimen of *Pieris brassicæ* visited one flower of scarlet *Geranium*, three of pink *Geranium*, took a flight, settled, returned, visited pink *Geranium* once, hesitated over *Petunia*, and lastly visited six more flowers of pink *Geranium*, having passed over plenty of scarlet *Geranium*, red *Papaver*, red and white *Antirrhinum*, asters, &c.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

ENTOMOLOGICAL NOTES FROM CHICHESTER.—Although the year was early heralded by the gay music of the song thrushes (*Turdus musicus*), the furze was bright with golden blossoms, and little twigs of whitethorn (*Cratægus oxyacanthæ*) were in full leaf in a sheltered spot as early as the first week in January, the promise of an early spring and summer was not fulfilled; on the contrary, an exceedingly late season ensued, the hawthorn blossoms not being fully out till almost the last days of May. As with vegetation, so with insects; the few species that have hitherto appeared have been behind their usual time as much as a fortnight or three weeks; for instance, *Hepialus humuli*, which usually comes out about midsummer, was first seen by me on the 5th of July; some of the females, which I have taken here in damp ditches, are of good size and brightly coloured, differing considerably in these respects from specimens captured in fields and pastures. For several seasons now the lepidopterist has had to tell a tale of great scarcity of butterflies and moths, and the present one seems to be worse even than the preceding. However, it appears to be a rule that bad seasons should produce some particular insect in some abundance,—the more observed, it may be, on account of the paucity of others. At all events, during June, the pretty little clearwing, *Sesia tipuliformis*, was fairly common on currant and gooseberry bushes in most gardens, flitting in the sunshine like a little gnat, and resting for a few seconds on the leaves. I found the best way of securing them was to box them when thus settled, which I found to be a not very difficult task. Amongst the Sphingidæ I may mention *Sphinx ligustri*, *Chærocampa elpenor*, *Smerinthus populi*, *S. ocellatus*, and *S. tiliæ*, as those I have taken and set, the last named being of very dissimilar tints. One especially is noteworthy for an exquisitely lovely olive-green, which was bred from a dark variety of the larva found in July, 1882. Larvæ of *Leucoma salicis*, taken from poplars on June 20th, produced imagines in less than a month, the moths emerging on July 13th. All through May and June I was anxiously watching in my breeding-cage for *Stauropus fagi*: six eggs, laid by a melanic variety of the female, were sent me last year by a most kind friend. These in due time hatched and fed up, all six passing safely into the pupa

state; but from some unaccountable reason, to my great disappointment, not one of the moths came out. I should be very grateful if some one could suggest the cause of the failure, and give me any hints as to the management which would prevent a similar misfortune another time. I have now four little larvæ, hatched on the 7th of this month (July), which appear to be doing as well as one could desire. I fear that the conservatory into which I took the pupæ in May must have been too hot, causing them to dry up. The larvæ of *Halia wavaria* were in some gardens quite a nuisance, stripping the leaves of the gooseberry and currant bushes, and with the sawfly (*Nematus ribesii*) causing some injury to these useful fruits. *Acidalia incanata* has not failed to put in an appearance. I have not yet tried sugaring, having such bad accounts from my friends as to its being quite useless to do so; and the Noctuæ that I have seen have been of the commonest description, only such species as *Leucania pallens* and *L. impura*, *Hadena lithoxylea*, &c., being met with. As for the Diurni—with the exception of a few *Vanessa urticae*, *V. atalanta*, and *V. cardui* (these last looking miserably worn and faded, as if they had seen two or three summers and winters), and some of the commoner “skippers”—this district, at least, has been almost without them. Thousands of larvæ, doubtless, perished in the disastrous salt-storm of April 29th of last year, and the present dearth of insects is not much to be wondered at. To these few notes I may add that the larvæ of a sawfly, found by me on *Veronica anagallis* last November,—some of which I fed up, and which Mr. Fitch, to whom I sent them for identification, thought might be *Athalia annulata*, Fabr.,—produced perfect insects during May, and prove to be that species.—JOSEPH ANDERSON, jun.; Alie Villa, Chichester, July 20, 1883.

ABBOT'S WOOD IN JULY.—During the first week in July I paid a visit to Abbot's Wood, where I had hoped to do some considerable collecting. Upon my arrival there I was surprised to find such a few species on the wing. The weather was all that could be desired: the sun shone brilliantly by day, and warm over-hanging clouds made the evenings look well for sugar. But the weather apparently had little to do with the scarcity; for if it requires sunshine and warmth to cause emergence from the pupa, there certainly was an abundance of both at that time. The only member of the Diurni on the wing of any exceptional interest was

Arge galathea, and that I must say was the most plentiful insect there, if I may except the flies, which latter were so pertinacious and swarmed in such multitudes as to make collecting a far more difficult task than can be imagined, as they took every opportunity of creeping into one's eyes, nose, mouth, &c., and in such numbers that I was ultimately obliged to retreat. *Melitæa athalia* was apparently over, as I saw but a few faded specimens, but it apparently had not been plentiful. Some of the more common butterflies were out in fair numbers, such as *Hesperia sylvanus*, *H. linea*, *Satyrus hyperanthus* and *S. janira*; but *Argynnis adippe*, which should swarm there, was hardly to be seen. Plenty of worn *Cynthia cardui* were flying over the thistle-heads, which promises a goodly number of them for September. The Geometræ on the wing were not numerous; the only species at all plentiful were *Timandra amataria*, *Cidaria fulvata*, and *Tanagra chærophyllata*. A few *Angerona prunaria* were seen, but not in any degree plentiful. At sugar nothing beyond the very commonest insects put in an appearance; and the White Field being in the possession of a herd of oxen, and most of the trees having been cut down, rendered sugaring by oneself anything but pleasant. Although Noctuæ would not come to sugar, yet there were a few upon the wing, among which I noticed *Plusia chrysitis* and *P. iota*, but by no means so many as the time and weather should warrant. I should like to hear any opinions about such scarcity as appears to prevail, particularly as the foliage of all the trees has come out in more than usual luxuriance, and forms quite a contrast with the scantiness of last year.—J. P. WHINSTONE; Pevensey Road, Eastbourne, July 14, 1883.

ABBOT'S WOOD.—Having just returned from a visit to this locality, in company with the Rev. E. C. Dobree Fox, I should like to caution any of your readers who may be thinking of going there this year,—first, that the White Field is no longer available for sugaring, most of the trees having been cut down, and the field occupied by a herd of cattle; and secondly, that sugar in that locality was this year an utter and ludicrous failure, only three good insects having fallen to our lot during the whole fortnight, and even the commonest species being for the most part conspicuous by their absence. I hope to give more details in a future number.—(Rev.) CHAS. F. THORNEWILL; The Soho, Burton-on-Trent, July 23, 1883.

NEW FOREST IN JULY.—The month of July being the most lively, and generally considered the most productive, I determined to pay a visit with a friend to the New Forest about the 14th. Having visited it previously with excellent success, I built many “castles in the air” during the journey down, and the visions of good things about to be captured both on sugar and on the wing made me feel light-hearted upon my arrival. Notwithstanding the fact that a resident informed us that things were scarce, I set to work with a will, and put my “sugar” on with hope. Soon my “castles” vanished one by one—for while waiting for my “sugar” to take effect I looked about for such species as were on the wing at dusk, and beyond three *Acidalia aversata* and one *Melanthia albicillata* I saw nothing. Turning to my “sugar” I found four much-worn *Leucania turca*, and my friend on his found one *Xylophasia polyodon*. On other nights our results were practically *nil*, for, except two or three *Mania maura*, nothing arrived. However, we solaced ourselves with the hope that the day-flyers would make up for our disappointment; and as the sun shone brightly on our first morning we started for the *Meliloti* ground, and all I can say is that no *Zygæna meliloti* came home on my setting-boards. One or two *Argynnis adippe* sported over the ferns; and upon our arrival at Wood Fidley, well known as one of the most productive grounds, we began to realize that something was seriously wrong. Here we searched the beech-trees for *Cleora glabraria* without result, and coming upon a warm corner we found a bramble-bush smothered with bloom and studded with four worn *Limenitis sibylla* and three *Argynnis paphia*. A single *Boarmia roboraria* rewarded me for my searching, which, being in good condition, was almost the only insect of value which I obtained during ten days’ work. This, bad as it was, was my best day’s collecting, for I did not see either *Triphæna fimbria*, *T. subsequa*, *Nola strigula*, *Acidalia straminata*, *A. inornata*, *Catocala promissa*, *C. sponsa*, *Apatura iris*, *Lithosia quadra*, and the many other species so certain in good seasons. We turned to beating with a like result, for beyond one *Notodonta chaonia*, which fell to my friend’s tray, and one half-fed *L. quadra* to mine,—no larvæ, except a few *Eupithecia pulchellata* from the foxgloves,—no others were seen. When I enumerate such other things as I have taken, and those mostly in the smallest numbers, viz., *Thecla quercus* (one),

Lycæna ægon (plentiful, but worn), *B. repandata* (three), *Geometra papilionaria* (two), *Phorodesma bajularia* (one), *Melanippe unangulata* (few), *A. imitaria* (few), *Eubolia mensuraria* (few), it will be seen that species are so scarce where they should be plentiful, that I trust some of our more experienced entomologists will give their opinions upon it. — H. JOBSON, JUN.; 3, Clarendon Road, Walthamstow, July 24, 1883.

NOTES ON THE SEASON. — I should like to record that up to the present I consider that the season, so far as Micro-Lepidoptera is concerned, has been a good one. I have been successful in taking *Coccyx pygmæana* and *Mixodia bouchardana* again this season, as well as many other rare Tortrices. Among the Tineæ I have bred a fine long series of *Psyche inconspicuellæ* and *Coleophora inflatella*, all from the county of Surrey. Among the Macro-Lepidoptera I have taken a great many of the larva of the red variety of *Tæniocampa gracilis*, but I am sorry to say that about ninety per cent. are ichneumonised. In fact, parasites of Lepidoptera are very plentiful everywhere this year, both in and out of my breeding-cages. — CHARLES BODEN; 228, Bermondsey Street, S.E., July 17, 1883.

CAPTURES AT DOGWOOD FLOWERS.—The dogwood, or common cornel, is not included by either Green or Knaggs in their lists of plants whose flowers are attractive to moths. Possibly, therefore, it may be of interest to some readers of the 'Entomologist' to know that, on the evening of June 29th, my brother and I found moths swarming to the blossoms on Wimbleton Common. So plentiful were they that we remained at one shrub the whole time, and caught as fast as we could bottle. The atmospherical conditions were very favourable: a heavy thunderstorm passed over London an hour or two later. The following species were captured:—*Iodis lactearia*, *Cabera exanthemaria*, *Larentia pectinaria*, *Leucania impura*, *Axylia putris*, *Apamea unanimis*, *Miana strigilis* (black var.), *Miana arcuosa*, *Agrotis exclamationis*, *A. corticea*, *Noctua augur*, *N. festiva*, and *Hadena genistæ*.—F. J. BUCKELL; 316, Upper Street, Islington, N., July 11, 1883.

VANESSA CARDUI IN KENT.—My friend Mr. Biggs, who has been staying at Ramsgate during the past three weeks, observed this species in great abundance during the whole period. One was seen seven miles out at sea.—T. EEDLE; 40, Goldsmith Row, Hackney Road, London, E.

RETARDED EMERGENCE OF SPHINX LIGUSTRI. — In September, 1881, a gentleman brought me a specimen of the larva of *Sphinx ligustri* to name for him, which I did, instructing him as to its management, being nearly full-fed. It appears that he put it into his glass fern-case, and in a few days lost sight of it, forgetting I had told him it would bury itself in the ground to pupate. No further notice was taken until about the beginning of April this year (1883), when a fine imago appeared in his glass fern-case without any visible opening or means of access. This so excited his surprise that he brought me the insect alive in a tumbler, when I solved his riddle for him. Of course there is nothing extraordinary in this, except the circumstance that here was a pupa kept indoors in a temperature frequently far above the average, yet emergence was delayed or retarded nine months beyond the normal time, as it ought to have emerged in due course in June, 1882. This seems difficult to reconcile with forcing emergence by the natural or artificial application of increased temperature. I have often bred *S. ligustri*, sometimes in large numbers; but I have never before known any specimen of this species go beyond the normal time.—W. M'RAE; 3, Bedford Place, Bournemouth, July 16, 1883.

SPHINX PINASTRI.—I have done but little in Entomology for the past two years, but I had the good fortune to capture another *Sphinx pinastri* last year, within a few yards of the spot where I took the other which was recorded in the 'Entomologist' (Entom. xiv. 211), and am still on the look out for more, as I find I took one on July 22nd, 1881, and one July 23rd, 1882.—F. W. AGER; Borough Asylum, Ipswich, July 16, 1883.

DEILEPHILA LIVORNICA IN ESSEX. —Mr. E. Bond, of 12 Queen's Square, Upton Park, E., brought to me for inspection this week a fine recent specimen of *Deilephila livornica*, which he had the good fortune to find at rest on a door-post of a shop in Upton Park, on the 11th inst.—JOHN T. CARRINGTON; Royal Aquarium, Westminster, July 14, 1883.

VARIETY OF HEPIALUS LUPULINUS.—The white varieties of this swift are common enough on the old Guildford race-course, wherever there is any flowering grass, the first week in June. I have been endeavouring to catch one quite white, but have not hitherto succeeded. The soil is of course chalk. I hope

eventually to have some duplicates for brother entomologists.—A. H. SWINTON; Binfield House, Guildford.

HEPIALUS VELLEDA IN SOMERSET.—As the authorities, such as Newman, Stainton, &c., give *Hepialus velleda* as almost exclusively a northern insect, it may interest your readers to know that I captured two specimens, and saw others, on the top of the Quantock Hills, on the evening of June 30th.—(Rev.) J. SEYMOUR ST. JOHN; Crowcombe Rectory, Taunton.

HERMAPHIRODITE ODONESTIS POTATORIA.—I have just had emerged from pupa a very curious specimen of *Odonestis potatoria*. The right antennæ is that of the male, whilst every other portion of the insect is exactly the same as the ordinary female. I do not know whether this is of common occurrence in this species, but have asked several gentlemen who have bred numbers of *O. potatoria*, and they have never noticed this curiosity.—W. T. WRIGHT; 40, Long Hedge Lane, Nottingham, July 4, 1883.

VARIETY OF EUBOLIA PALUMBARIA; EUTHEMONIA RUSSULA, EPIONE VESPERTARIA, AND SATYRUS HYPERANTHUS.—I took a beautiful variety of *Eubolia palumbaria* on Strensall Common, near York, on July 14th. It is a perfect specimen, and almost uniformly sooty black. The rust-coloured lines, which in the ordinary type are so much darker than the ground colour, are paler in the variety. On the same ground I took *Euthemonia russula* in good condition; and on the adjoining ground, at Sandburn, I netted a nice series of *Epione vespertaria*, which was getting over. With it the ringless form of *Satyrus hyperanthus* also occurred.—G. T. PORRITT; Huddersfield, July 19, 1883.

PROLONGED EXISTENCE OF ICHNEUMON IN PUPA. — I have this season another rather interesting case, about which possibly Mr. Bridgman, our excellent hymenopterist, may have something to say in the future. In 1880 I collected several dozen of the pupa of *Gortyna flavago* from the pith of young shoots of elder-bushes. Most of them duly emerged the following spring, but some few stood over until the spring of 1882. In April this year I wanted the use of the breeding-cage containing these empty pupa-cases, and commenced clearing it out, when I observed that one pupa presented a rather peculiar appearance. I broke off about three

of the anal segments of the pupa-case, when I found it contained a living larva. I transferred it to a glass-top box and observed it from time to time, and saw that life was continued and development going on, the colour gradually changing from opal-white to a jet-black. Although the anal segment protruded beyond the upper part of the pupa-case at first, they contracted until they were ultimately concealed or entirely withdrawn within the upper portion of the case, an occasional wriggle being the only indication of life. At last one morning an extra contortion or wriggle brought it entirely clear of the case, and there lay a partially-developed Ichneumon, quite alive, but rather inert; the dorsal area black, but the lateral and ventral areas straw-colour; the wings pale and semi-transparent; the legs all formed, but the creature seemed too weak to make any use of them. It lay as if dying, but in reality development was still going on, as was indicated by the gradually darkening colour of the sides and abdomen, until the parasite became conscious of its power to move its legs and wings, when I sent it to Mr. Bridgman in a lively condition. Here, then, is a case of an Ichneumon, like many of our Lepidoptera, continuing in the pupa state two years beyond what we suppose to be the normal time. Mr. Bridgman mentions that the parasites infesting *Zygæna filipendulæ* are known to have a similar prolonged existence in the pupa state. — W. M'RAE; 3, Bedford Place, Bournemouth, July 16, 1883.

SOUTH LONDON ENTOMOLOGICAL SOCIETY.—The ordinary meeting of this Society was held on Thursday, July 5th, 1883, at 94 New Kent Road, the President, Mr. J. R. Wellman, in the chair. Some very interesting specimens were exhibited, amongst which may be mentioned, *Prosopis dilatata*, *P. brevicornis*, *Heriodes campanularium*, and *Stelis phæoptera*, all being taken on the platform at Box Hill Station by Mr. Billups, who also took *Pompilus spissus* in Headley Lane. Amongst recent exhibits have been a species of *Apanteles*, bred from a larva of *Boarmia repandata*. The whole brood emerged from the cocoon in the space of about half an hour, with one exception, which, although alive, and with its head outside the cocoon, was held a prisoner, and by this means perished. The total number of perfect insects produced was forty-two, the whole being female, with one exception. The second excursion of the season was held at Box

Hill, on Saturday, June 30th, where many good captures were made.—W. H. MILES, Hon. Sec.

ERRATUM.—Entom., No. 242, p. 160, line 5 from foot, for *Heliothis* read *Lomaspilis*.

REVIEW.

Insects Injurious to Fruits. BY WILLIAM SAUNDERS, F.R.S.C., &c. Philadelphia: J. B. Lippincott & Co. London: 16, Southampton Street, Strand. 1883.

THIS handsome volume will doubtless be welcomed by the many practical men in a country in which economic Entomology is of so great importance. Its 436 demy 8vo pages treat of 266 insects injurious to nineteen fruit trees; and these are fully considered in their practical application, no part of the work being taken up with superfluous scientific descriptions or details; the 440 mostly excellent woodcuts with which the volume is illustrated being relied upon to aid the reader in his identification of any given pest.

The author's intentions are clearly stated in his preface as follows:—"Injurious insects are so universally distributed that there is no part of our continent where fruit-culture can be profitably carried on without some effort being made to subdue them. Among the insect-hosts we have friends as well as foes, and it is to the friendly species that nature has assigned the task of keeping in subjection those which are destructive; these, in many instances, do their work most thoroughly, devouring in some cases the eggs, in others the bodies, of their victims. It is not uncommon to find the antipathy to insects carried so far that a war of extermination is waged on all, and thus many of man's most efficient allies are consigned to destruction. . . . It has been the aim of the author of this work to bring together all the important facts relating to insects known to be injurious to fruits in all parts of Canada and the United States, to add to the information thus obtained the knowledge he has acquired of the habits and life-history of many of our insect-pests by an experience of over twenty years as a fruit-grower and a student of Entomology, and to present the results in as concise and plain

a manner as possible, avoiding all scientific phrasology except such as is necessary to accuracy."

In our opinion these good intentions have been faithfully carried out, and a valuable volume has been produced. The only faults we can find are the two which are general in similar works; firstly, that a great point is strained in including all the species treated of as injurious insects; and secondly, the remedies suggested for their destruction will often be found quite impracticable: these, of course, are more or less inherent, because from experience we all know that in certain seasons many species affecting certain trees can and do prove injurious, and the successful remedies against attack are in most cases yet to be learned. This will not be until the personality and nature of the insect-pest is thoroughly well known to the practical man, and the great aim of this and similar works should at present be to spread this much-needed information. It is also a great point to lead the practical man to distinguish between the gardener's friends and the gardener's foes: in no economic entomological work—except, perhaps, Curtis's admirable volume—has so much attention been paid to those great allies, the natural foes of the noxious species. The inclusion of many of the larger Rhopalocera, *Sphingide* and *Bombycide*, adds, perhaps, greatly to the entomological interest of the volume, but it is a great question whether they are not seriously out of place. Many bee-keepers will feel the consideration of *Apis mellifica* as an insect injurious to fruits to be a gross libel.

This volume well deserves attention in this country, as many of the species treated of are either indigenous and equally destructive here, or have close allies with similarly noxious habits. For instance, the American blight, or, as Saunders has it, the woolly louse of the apple (*Schizoneura lanigera*), treated of at pages 13 and 27; the codling moth (*Carpocapsa pomonella*), p. 127; the pear-tree slug (*Selandria cerasi*, Peck., recte *Eriocampa limacina*, Retz.), p. 150; the imported currant worm (*Nematus ventricosus*, Klug, recte *N. ribesii*, Scop.), p. 339; and others are concisely treated of in well-illustrated and reliable articles. One or two assertions appear doubtful; we should be inclined to be sceptical as to the normal double-broodedness of *C. pomonella*. *E. limacina* and *N. ribesii* are both spoken of as passing the winter in the pupa state; here we know they exist

as larvæ in their cocoons until quite late in the spring. The experienced Frederick Smith used to persist that no hymenopterous insect passed the winter as a pupa; this assertion, however, requires some slight modification. The American *Anthonomus* (*A. quadrigibbus*, Say) does not appear to be so destructive as our apple species, and the manner of oviposition appears to be quite different (see p. 134).

The numerous figures in this work will be tolerably familiar to the readers of the various State reports, of Packard's excellent 'Guide,' and of the 'Canadian Entomologist,' of which latter periodical the author is the editor. Their source, however, is very justly acknowledged in the preface, and they are mostly well worthy of the use to which they are put, the figures of *S. cerasi* and its ally, *S. vitis* (figs. 159 and 295), with one or two others, being the only exceptions.

In popular works popular names are more or less a matter of necessity, and in America the objection to their use is greatly minimised by the vulgar name being more often than not a literal translation of the scientific name. The term "locust" is repeatedly misapplied, and we are pleased to see the renowned *Caloptenus* referred to as "grasshopper or locust" (p. 157); the former correct name may thus make headway. But, on the other hand, it is a great pity to have *Cicada septendecim* again styled the "Seventeen-year Locust." The volume concludes with a short synonymic list referring to many of the species treated of, and with a good index.

To all entomologists this cheap and thoroughly well got-up volume can be strongly recommended; much will be found to instruct and interest, especially the curious forms of larvæ, e. g., *Empretia* (fig. 112), *Phobetrum* (fig. 111), *Nematocampa* (fig. 179), *Procris americana* (fig. 275), which greatly reminds us of the larvæ of *Trichiocampus viminalis*, Fall., feeding on our own poplar-leaf, &c. To the gardeners and practical fruit-growers of this country much of the information will prove readily applicable and of generally good service until Miss Ormerod produces an enlargement of her 'Manual,' or, still better, a similar work on our British species.—E. A. F.

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[No. 244.

OBSERVATIONS ON INSECT-LIFE IN 1883.

BY PETER INCHBALD, F.L.S.

I SHALL not confine my remarks to the plant-miners alone, as in previous years, but shall touch upon other representatives of insect-life that happen to have come under my notice during the current year. To ensure exactness as to time and date, I will tabulate my observations month by month. A calendar of this kind is more likely to attract the attention of collectors than one of a more diffuse and desultory character.

March 30th.—*Cecidomyia betulæ*, Winnertz, first appeared in the glass-topped box; and these little gall-gnats continued to come forth from the capsules of the birch catkins of the previous year during the month of April. Sometimes I had a score in my box at one time. Small as this Cecid is, it is not free from the attacks of a still smaller Chalcid. Franz Löw has admirably described the larval and pupal states of this tiny Cecid, and I had but to follow him in my researches.

April 12th.—The deflected rosettes of *Salix capræa* gave forth their tenants on this and following days. I am still doubtful about its reputed identity with *Cecidomyia rosaria*. The bosses are all deflected, a distinct loop serving so to curve the rosette that it is made to face the surface of the ground below.

April 16th.—*Nematus croceus* hatching abundantly from the pupæ of last May; I collected the larvæ from the edges of the leaves of *Salix capræa*. The cocoons are dull blackish brown, somewhat larger than those of the gooseberry sawfly. The imagines appeared each morning, quite to the close of the month of April. I reared nearly a score.

April 28th.—Picked up a larva of the glow-worm on the Ormes Head, Llandudno. It fed on the mucus and exuviae extruded by a snail (*Helix*), assuming pupahood at the close of May. The colours of the pupa-case showed more of rose on the under side, blended with the grey. It continued to emit light, which became intensified as it assumed the imago stage of existence on the 6th of June.

May 14th.—The first carrot-fly (*Psila rosæ*, Fabr.) emerged to-day from its pupa-case. It had remained in the soil, under a bell-glass, since August of the previous year. The pupa-case is pale brown, small and shining, obliquely truncated at one end. Dr. Meade tells me that "the carrot-fly was named *Musca rosæ* by Fabricius, who seems to have known nothing of its early history." Meigen says the *Psilæ* are found on bushes in hedges, but that nothing is known of their life-history. Dr. Meade observes further that probably Fabricius may have captured the fly on a rose, and therefore he named it after that flower. Curtis, I believe, is the first to mention that *Psila rosæ* feeds on the carrot in the larva state.

May 16th.—Vinegar-flies (*Drosophila fenestrarum*, Fallen) appeared in all their stages in a vinegar cask. All the *Drosophilæ*, not a numerous family, breed in sour vegetable matters. The most common (*Musca cellaris*, Linn.) is found in our beer cellars, and closely resembles *D. fenestralis*, but is larger; and has the "transverse veins of the wings further apart," writes Dr. Meade.

May 22nd.—Collected a handful of disembowelled humble bees under sycamore trees. The abdomen is nearly always more or less eaten away—probably by the common shrew? I am told that Darwin mentions the circumstance of our humble bees being decimated every year by mice. I never find the moss bee or the red-tailed bee so mutilated.

May 27th.—The *Cardamines*, both *C. pratensis* and *C. amara*, had their flower-buds strangely distorted by the little red larvæ of *Cecidomyia cardaminis*, Winnertz. In very swampy places, among *Sphagnum* moss, scarcely a plant escaped. I failed to rear the gnats in April from larvæ collected in May, 1882. Winnertz tells us that he bred this little *Cecid* after repeated failures. I trust to be successful another year.

June 25th.—Flights of glow-worms attracted to our lamps, as many as eighteen appearing at one window. Such flights look

almost like migration. They appeared as soon as it was dusk on various evenings, and continued to come for nearly an hour. The most remarkable circumstance was that I noticed no females on the green-sward of the terrace below to account for their appearance in such quantities.

July 7th.—The long straight mines of *Phytomyza plantaginis*, Goureau, running parallel to the mid-vein of the leaf of the ribwort plantain (*Plantago lanceolata*). Robineau Desvoidy says, “it hollows out a very narrow gallery, at the end of which it changes into a yellowish pupa.”

July 8th.—Reared *Phytomyza affinis*, Macquart, from leaves of the knapweed (*Centaurea nigra*). In a letter, dated August 4th, Dr. Meade observes:—“I think that *P. affinis* and *P. albiceps* are probably only varieties of each other, the chief point of distinction being that in the former there is a narrow pale line in *all* the abdominal segments, while in *P. albiceps* there is only *one* (wider) on the penultimate segment.”

July 25th.—In May or June of this year a friend, residing at Driffield, in the East Riding of Yorkshire, reared from a larva of the garden tiger, *Chelonia cava*, examples of *Exorista chelonix*, Rondani, which he put into my hands. I sent them at once to Dr. Meade, and I learn that Rondani bred this fly, one of the *Tachinidæ*, from a similar pupa. Dr. Meade says, “I have not seen an English specimen of this fly before, though I have two German ones.”

Fulwith Grange, near Harrogate, August, 1883.

GRAPHOLITHA CÆCANA, Schläger. (CÆCANA, H.-S.):

A TORTRIX NEW TO BRITAIN.

BY GEO. COVERDALE.

HEAD pale brownish gray; eyes black; face and palpi pale ochreous gray; apical joint of palpi slender, nearly as long as the basal, which is stout and curved upwards; middle joint ascending, curved, more than twice as long as the apical, and as stout as the basal, being slightly thickened beyond the middle, and clothed with rough projecting scales; antennæ brownish grey; thorax rather slender, ovate, brownish grey. Anterior wings

nearly three times as long as broad. Costa slightly but regularly arcuated, apex rather produced, anal angle rounded. Colour shining brownish grey, dusted with ochreous, particularly towards the hind margin. The costa, which is very pale grey from near the base, has about seven black geminations, the first four or five being very obliquely placed. The first streak of the third gemination is much produced, and may generally be traced as a curved line across the wing to the anal angle; the second streak of this gemination also runs with the first to the anal angle, but almost from the costa it changes to a lustrous leaden blue. The fifth gemination is much produced towards the hind margin, its second streak being lustrous leaden blue, and joining another blue streak, which comes from the costa nearly parallel with the hind margin. On the disk are two or three parallel longitudinal black lines, and another along the fold to the anal angle. Towards the hind margin are a few short, transverse, irregular, black streaks. Cilia smoky grey. Posterior wing—apex obtuse, slightly produced; anal angle rounded. Colour pale grey, with long, slightly paler cilia. Abdomen long and slender, grey. In the female the posterior wings are dark brownish grey, with paler cilia. Expands 6 lines.

The insect may be distinguished at a glance by the elongate anterior wings, pale costa, and longitudinal streaks, from any other British Tortrix. It occurred locally, near Deal, in the early part of July, amongst *Ononis spinosa* and *Onobrychis sativa*, and I thought at once it was something new. After exhausting all our works on the subject, I showed them to Mr. H. T. Stainton, with whose kind assistance it proved to be the above species. It is described and figured by Herrich-Schäffer in his 'Systematische Bearbeitung der Schmetterlinge von Europa' (iv., p. 253), 257. He places it in his Subgenus xxix., *Grapholitha*, Tr., Dup., which includes such insects as *Stigmonota leplastriana*, *Catoptria microgrammana*, *C. albersana*, *Semasia wæberana*, *Opadia funebrana*, &c. By Heinemann it is mentioned, 'Die Schmetterlinge Deutschlands, &c.', ii., 180, as occurring about *Ononis spinosa*. In Staudinger's 'Catalog der Lepidopteren, &c.', it stands under the genus *Grapholitha*, Tr., section D, *Semasia*, H.-S., in company with *Catoptria citrana*, *C. wimmerana*, *C. hypericana*, *Stigmonota coniferana*, *Coccyx strobilana*, &c. The *Grapholitha* of these

continental authors seems to include a miscellaneous selection from *Coccyx*, Tr., *Stigmonota*, Gn., *Catoptria*, Gn., *Endopisa*, Gn., and *Carpocapsa*, Tr. From *Grapholitha*, Stephens, it is excluded by the structure of the palpi and the venation of the wings. Its most natural position seems to be between *Endopisa*, Gn., and *Stigmonota*, Gn., resembling the latter genus closely in the structure of the palpi. This, however, is but a crude opinion, and I should be glad to hear some of our older hands on the subject. Nothing certain appears to be known about the larva, *Ononis spinosa* and *Onobrychis sativa* being mentioned as probable food-plants. On the Continent it occurs in May and June, near Jena, Vienna and Wiesbaden, and in Hungary, Andalusia, and Southern Russia.

24, Fleming Road, Lorrimore Square, August 6, 1883.

NOTES ON THE SEASON.

BY EDWARD A. ATMORE.

DURING last year, and the commencement of the present, entomologists residing in various parts of the United Kingdom were nearly unanimous in stating the season of 1882 to be a bad one for Lepidoptera; Macro-lepidoptera especially were represented as scarce, and in this I concurred. I also observe, from notes which have recently appeared in the 'Entomologist,' that some of your correspondents speak of the present season as being an unsatisfactory one; but so far I cannot complain of the paucity of Lepidoptera in West Norfolk; indeed, to say the least, imagines were plentiful up to the 10th of July, when a course of wet weather set in, which, much to my regret, still continues. Micro-lepidoptera have been especially numerous, several species of Tortricidæ being commoner than I have ever before observed them. Among the Macros the Noctuæ have been more abundant than usually is the case. Some exceptions to this of course there have been, and always will be; but there has been one great drawback to collecting, *viz.*, the unusual plenty, and I might say unusual activity, of those little pests commonly known as "midges" (our country-folk are pleased to call them "midgeons"). These insidious atoms on some evenings almost compel one—if "the weed" is at all indulged in—to keep up a

“perpetual smoke,” or give up the pursuit. However, I will not dilate further on this, but proceed to enumerate some of the species of Lepidoptera met with here.

The salallows, as I have before observed, are not remarkable for attracting rarities, but out of the commoner herd of *Tæniocampa* and hybernated species might be boxed as usual a few *Xylocampa lithoriza*, *Trachea piniperda*, *Anticlea badiata*, *Larentia multistri-garia*, *Tæniocampa gracilis*, *T. rubricosa*, and an odd *T. munda*. A single *Cymatophora flavicornis* was also met with on a birch tree, apparently drying its wings. *Brephos parthenias* could be seen in numbers at the beginning of April flying leisurely about the tops of birch trees, now and then one descending within reach of the net. *Tortricodes hyemana*, if desired, could be taken in plenty by beating oak trees in and around woods.

After the salallows had done blooming came a lull in collecting; but during April a few *Heusimene fimbriana* were captured in the bright sunshine flying around oaks, and the birch trees yielded a nice series each of *Micropteryx sparmanella*, *M. unimaculella*, and *M. semipurpurella*, whilst *M. purpurella* was plentiful, and of course *M. subpurpurella*—often mistaken for something better—was ubiquitous among oaks, from which trees an occasional *Eupithecia abbreviata* was disturbed. Upon the arrival of May—a month always welcomed by entomologists because of the many species then emerging from pupæ—our district became enlivened with insects. Among the Macros taken this month were *Lycæna agestis*, *Cidaria suffumata*, *C. corylata*, *C. silaceata*, *Platypteryx hamula*, *P. falcula*, *Tephrosia punctulata*, *Ypsipetes impluviata*, *Phytometra ænea*, *Emmelesia albulata*, *Eupithecia indigata* (fine and plentiful), *E. castigata*, *E. nanata*, and a single worn *E. dodoneata* on railings. The Tortrices which have been fairly common are *Phleodes tetraquetra*, *Clepsis rusticana* among *Myrica gale* (bog myrtle), *Phoxopteryx siculana*, *P. biarcuana*, *P. uncana*, *Coccyx splendidulana*, *C. argyrana*; and at the end of the month, flying in the bright sunshine among *Ulex europæus* (furze), *Stigmonota internana*, looking much whiter on the wing than its commoner companion, *Catoptria ulicetana*. The following are some of the Tinæ met with:—*Coleophora albicostella* and *C. murinipennella* among furze and *Luzula* respectively. Of the *Lithocolletidæ* I noted *Lithocolletis tristrigella*, *L. schreberella*, *L. stettinella*, *L. hortella*, *L. trifasciella*,

L. corylifoliella, and *L. salicicolella*. Other Micros captured were *Eupæcilia nana*, *Phlæodes immundana* (a very uncertain species, and not so common this year), *Phoxopteryx mitterbacheriana*, *Swammerdamia griseocapitella*, *Tinea bistrigella*, *Perittia obscuripunctella*, and *Gracilaria tringipennella* (readily obtained by sweeping meadows where *Plantago lanceolata* thrives). Pupæ collected from the central shoots of *Pinus sylvestris* (Scotch fir) in the earlier part of the month yielded some fine specimens of *Retinia turionana*.

In June a visit to fields, hitherto unworked, rewarded me with a long series of *Procris statices*: a hundred could easily be taken in a very short space of time by sweeping, or searching flowers of *Scabiosa succisa* (devil's-bit scabious) and *Trifolium pratense*. This has been the first season I have made acquaintance with this species, and one cannot help being struck with Mr. Stainton's remark in the 'Manual' on the species in question. In the same meadows *Emmelesia albulata* would start up every few yards from among its food-plant, viz., *Rhinanthus crista-galli*.

A day's collecting on the 13th of June in a fenny district and adjoining country, near this town, proved well worthy of further attention. Many marsh or fen plants flourished there, such as *Comarum palustre*, *Menyanthes trifoliata*, *Valeriana dioica* and *V. officinalis*, *Thalictrum flavum*, *Iris pseudacorus*, &c.; and *Peucedanum palustre* grew in such abundance that one might almost wonder at the absence of *Papilio machaon*. Larvæ of *Taniocampa gracilis* were common in screwed-up leaves and tops of *Spiræa ulmaria* (meadow-sweet), as also were larvæ of a Tortrix, which would no doubt be those of *Peronea aspersana*. Puckered leaves of *Angelica sylvestris*, tenanted by larvæ, are now producing some *Depressaria angelicella*. On this day, amongst others, the following Macros were taken:—*Argynnis selene*, which by the way I was pleased to see, for Fritillaries are of rare occurrence in this neighbourhood; a fine series of *Hydrelia unca*; *Halias clorana*, *Collix sparsata*, *Phibalapteryx lignata*, *Eupisteria heparata*, *Ypsipetes impluviata*, and ten specimens of *Eupithecia pygmæata*, mostly in fine condition. In the woods adjoining the fen were *Lithosia rubricollis*, *Macaria liturata*, *Eupithecia indigata*, *E. exigua*, *E. castigata*, *Asthena luteata*, and *Euclidia mi* (in open grassy places). Of Micros on this occasion I noted *Orthotænia antiquana*, *Coccyx*

nanana, *Eupæcilia nana*, *Choreutes scintilulana* (among *Scutellaria galericulata*); *Phlæodes immundana* (getting worn), *Nemophora metaxella*, and *Bucculatrix cidariella* (among alders); *Elachista cerussella*, *Gelechia rufescentella*, *Swammerdamia cæsiella*, *Scardia arcella*, and *Bucculatrix cratægifoliella*. In all, 130 species observed.

Early in June *Bombyx rubi* was out in numbers on our heaths, its wild flight and size making it a very conspicuous object. In similar places *Heliodes arbuti*, *Heliothis dipsacea* (one specimen only), *Agrotis porphyrea*, *Pempelia palumbella*, *Phycis carbonariella*, and *Platytes cerussellus* were taken; the latter, although local, has absolutely appeared in hundreds in some grassy spots on the heaths. Also during the month, *Acidalia subsericeata*, *Emmelesia decolorata*, *E. alchemillata*, *Melanippe unangulata*, and *Ephyra pendularia* were to be found at dusk; whilst out of the host of commoner Noctuæ attracted by sugar might be boxed a few *Dipterygia pinastri*, *Hadena suasa*, *Leucania pudorina*, *L. comma*, *Erastria fuscula*, *Acronycta leporina*, *A. aceris*, *Axylia putris*, *Aplecta advena*, *Caradrina morpheus*, *C. alsines*, *Agrotis corticea*, and *A. porphyrea*. The commonest insect at sugar during June was undoubtedly *Agrotis exclamationis*; but *Rusina tenebrosa* and *Miana fasciuncula* were nearly as plentiful. In and about the warehouses of the King's Lynn Dock Company, *Plodia interpunctella* was more abundant than I have ever before known it. Of the Micros not yet enumerated I note *Retinia pinivorana*, *Gelechia dodecella*, and *Cedestis farinatella*, among Scotch fir; *Orthotania ericetana*, *Grapholita campopoliliana*, and *Æcophora trisignella*; *Elachista subochreella* and *Tinagma resplendella* among alders; *Bucculatrix boyerella* among elm; *Pædisca bihunana*, *Penthina picana*, and a single specimen of *Phlæodes demarniana*, among birch trees; *Opostega saliciella*, *G. ligulella*, *G. tenebrella*, *C. affinis*, *C. diffinis*, *Coleophora fabriciella*, *Micropteryx seppella*, and *Adela fibulella*, were obtained by sweeping mixed herbage of meadows and corners of heaths.

Early in July I note as follows:—*Lycæna ægon*, just coming out; *Ebulea verbascalis* and a nice series of *Oxyptilus teucrii* among *Teucrium scorodonia*. Although this (the food-plant) grows nearly everywhere in patches on our heaths, this plume would appear to be excessively local, being confined to a few yards. *Crambus uliginosellus* *C. inquinatellus*, *Schrankia turfo-*

salis (common), and *Hypenodes costæstrigalis* (less frequent), on heaths; and *Macroglossa stellatarum* of constant occurrence in the town; some fine specimens of *Tortrix sorbiana*, and a few fine specimens of *Stathmopoda pedella*, apparently just emerging.

If I mistake not, *Plusia gamma* will be a perfect pest shortly. I first observed this species about the middle of May, and since that time it has been steadily on the increase. The pale colouring of the early specimens was very apparent, and I therefore suspect they had migrated from the Continent. Numbers of *Cynthia cardui* have also been observed (of course in worn condition), so that the insect will probably be commoner this autumn than it has been since 1879.

From the above remarks I think it will be seen that Lepidoptera have been far from scarce in this district; and, should the present wet and uncertain weather clear up shortly, I have reason to anticipate that my captures for 1883 will bear comparison with those of previous years.

8, Union Street, King's Lynn, Norfolk, July 18, 1883.

NOTES FROM BOURNEMOUTH; AND REMARKS ON THE SCARCITY OF LEPIDOPTERA.

BY W. McRAE.

THE yearly increasing scarcity of Lepidoptera during the last few seasons has aroused a spirit of enquiry among naturalists as to the causes, or combination of causes, which have produced this result. Mr. F. De V. Kane, in his interesting remarks in the 'Entomologist' (Entom. xvi. 52), suggests three probable causes, *viz.*, mild open winters, high winds and storms in spring, and unusual atmospheric conditions at the usual time of collecting. All these have, doubtless, as he has shown by careful investigation, and comparison of reports from various parts of the country, here as well as in Ireland, proved disastrous to lepidopterous insects. Whether they are of a sufficiently exceptional character to account for the extraordinary dearth of insects which prevails this season all over the country and in all situations, I would not pretend to say. I have no hesitation, however, in affirming that whether we attribute the scarcity to the

causes enumerated by Mr. F. De V. Kane, or suspect the existence of some latent but far more fatal agent, the fact remains patent, and indisputable, that many insects are now reduced in numbers, individually and specifically, to a point verging perilously on extermination; and I think it highly probable that many years must elapse before some species can again multiply and increase to their former normal numbers. This is a rather discouraging view to take, but when we find all the recognised methods of collecting fail we are driven to the unwelcome conclusion that large numbers are now non-existent, and therefore cannot obviously be lured by sugar, attracted by light, swept into the net, or in the larva stage shaken from their food-plant into the beating-tray.

Having heard of the complete failure of our forest species to put in an appearance, I determined to pay a visit to the New Forest, and test the accuracy of the reports for myself. Accordingly, on the 10th of July, I started for Brockenhurst, and having met my friend Mr. P. Bright, who had preceded me thence by a few days, we proceeded to our hunting-ground. He told me that, although he had been working diligently all day since his arrival, he had scarcely seen or taken anything; and that, with the exception of what I might fitly designate as some heroic collecting the previous evening in quest of *Acidalia emutaria* in the Hinchelsea Bog,—which involved the necessity of wading knee-deep in the mire, with the possibility of sinking at any step up to the middle,—he had scarcely secured anything worth the trouble of setting. Considering the risk and discomforts attending the “bog” work, followed by the inevitable walk of four miles home in the dark, I think thirteen specimens of *A. emutaria*, as the result of the united efforts of Mr. Bright and his coadjutor Mr. Gulliver, by no means an extravagant reward.

We scoured, on the day of my arrival, seven or eight miles of the best localities in the Forest, with the net result of two *Limenitis sibylla*, three *Argynnis paphia*, one *Macaria liturata*, one *Eubolia mensuraria*, one *Zygæna filipendulæ*, the latter the only representative of that genus we saw on the “*Meliloti* ground;” and, for want of better game, I filled some of my boxes with spiders and dragonflies. Gentlemen accustomed to collecting in the New Forest in the middle of July, on a very fine day, will understand the significance of some eight miles (including

New Copse, Stubby, and Ramnor) being traversed by two fairly experienced and active collectors during some eight or nine hours with only the above meagre result. Of such insects as *Liparis monacha*, *Eurymene dolabraria*, *Phorodesma bajularia*, *Cleora glabraria*, *Lithosia quadra*, *Z. meliloti*, not a single specimen was seen.

In Bournemouth and neighbourhood a few species—such as *Pachynemia hippocastanaria* and *Euthemonia russula*, *Nemoria viridata*, *Acidalia subsericeata* and *Plusia gamma*—have appeared in fair numbers; but the great bulk of common species, and such as are usually taken at sugar, are quite as scarce here as elsewhere. On the evening of June 29th I had the good fortune to take, on our heath, a specimen of *Heliothis peltigera*; and Mr. Bright took another specimen, near the same place, two evenings later.

A few years ago, having succeeded in establishing a colony of *Psyche villosella* in a quiet unfrequented corner of our heath, from which I bred several dozen males last season, I was in hopes of breeding a still larger number this; but a careful examination on several visits has disappointed my cherished expectations, and convinced me that the same causes that have proved so fatal to other Lepidoptera have been equally disastrous to my colony.

A friend suggested, the other day, that the large increase of collectors during the last few years may account for the abnormal reduction in Lepidoptera. Local species confined to a limited area might be, and as we know have been, partially or temporarily exterminated, but the range of most species is so extended as to render it next to impossible for any number of collectors to effect any sensible diminution. A slight increase in the number of birds that prey upon insects would be infinitely more destructive, and I am told that birds were never known to be so numerous as they are now in the New Forest. I have never seen the trees, especially deciduous trees, so rich in foliage, nor vegetation so luxuriant, as at present; and here I think there is a ray of hope for the entomologist, for not only will the wealth of foliage and herbage afford abundant sustenance, but, what is equally important, afford a protection to larvæ, that have, for the last two seasons, been exposed to countless enemies on leafless trees and bare stunted herbage.

NOTES ON THE EARLY PART OF SEASON, 1883.

BY H. T. DOBSON, JUN.

THE expression of opinion amongst Macro-lepidopterists seems to be general,—that although last year the great majority of insects were exceedingly scarce, yet the first six months of 1883 must rank as a greater failure. Now, with one or two exceptions, I can fully endorse this.

Having worked almost daily in New Malden, and its neighbouring localities, I find that the result of my captures to the middle of June (not counting the Micro-lepidoptera) is not equal to two good days' work. However, as July drew near matters considerably improved: "sugar" yielded profusely, and we found plenty of occupation with the net at twilight, most of the things we usually take being well represented. Amongst the number *Phorodesma bajularia* was unusually common; and some insects, such as *Melanthia albicillata* and *Pericallia syringaria*, both of which species I failed to see last summer, have turned up in their usual numbers. I also noticed that flowers were very attractive; one bed of lilies, which I worked for a few nights, was swarming with about a dozen species, such as *Plusia gamma*, *P. chrysis*, and *Cucullia umbratica*. July arrived, and my setting-boards were as full as could be expected, even for this busy month.

With every appearance of a continuance of success, I determined to try the New Forest; so in company with Mr. A. Mitchell we arrived at Brockenhurst on July 20th, but before we reached the Forest we had ample proof that "bad news travels quickly," for we were speedily informed of the unfortunate experiences of collectors already there. Nevertheless we were not discouraged, but worked on with energy and patience, both of which we found very essential qualities in order to make a solitary capture. We sugared many trees for four nights in different parts of the Forest, but failed to attract a single moth. In the daytime we were out during the best hours of sunshine, and went through some of the most favourable rides, where, at the same time last summer, we took or counted twenty-one species of Diurni, but upon this occasion we could only find thirteen, few of which were deemed worthy of a place in our collecting-boxes. We tried

beating for larvæ, which proved no more interesting and profitable than "sugaring" and general night-work. The only Geometræ that we met with in the daytime were *Acidalia immutata* and *Minoa euphorbiata*, which, with a few Pyralides and Tortrices, were all we could show for four days' collecting. Under these circumstances we thought it well to turn our attention to the heaths and bogs; so starting early in the evening, with one of the latter in view, we strolled across the heath, and in doing so we found that it produced a short series each of *Selidosema plumaria* and *Acidalia straminata*; also a few *Eupithecia nanata*, *Lithosia mesomella*, and one *Gnophos obscurata*. Upon reaching the bog we waited for sunset, when we were fully employed in taking a number of *Acidalia emutaria*, an insect very easy to secure if it were not for the fact that one had to wade through a foot of mud and water to get at it. We also found *Hydrocampa nymphæalis* and *Schænobius forficellus* flying in profusion, and a few *Nudaria senex* and *Schrankia turfosalis*, which, with some Tortrices and *Scopariæ*, kept us quite lively till darkness set in. We then lighted our lamps, but as they only proved the means of inducing some New Forest ponies to pay us a visit, we left the latter masters of the situation, and went home for once with all our boxes occupied.

After returning to New Malden I was much interested to ascertain if things were as common at "sugar" and on the wing as when I left. This I found to be the case, and may mention that among my first captures were *Apamea ophiogramma*, *Triphæna fimbria*, and a long series of *Cænobia rufa*; the last named I have not seen in this district before, although I have worked it for many years.

In concluding these notes I ought to mention that the horticulturist during the past spring has enjoyed quite an immunity from many insect pests, which in some measure compensates for the disappointment sustained by the entomologist in not being able to enrich the drawers of his cabinet.

New Malden, Surrey, August 10, 1883.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

LEPIDOPTERA IN THE NEW FOREST.—It is usually with hopeful anticipations that the lepidopterist packs up his apparatus and takes his ticket for that favourite collecting-ground, the New Forest; and it seldom falls to his lot to experience such a disappointment as has fallen to those who have resided there during the last month, viz. July. The hope of turning up something new, or at least of adding to his stock of rarities several interesting specimens, makes a trip to the above locality an event to be thought of for several months previously. If he has entertained any doubt with regard to the old proverb, that "The pleasures of anticipation are greater than those of realisation," he will still be in doubt, for his experience during his visit will assuredly not tend to dispel the idea, should he have formed such, that the realisation was half as pleasant as the anticipation. Upon his arrival, at the end of the second week in June, he would have soon observed that few species were on the wing, and even many of those which are usually plentiful everywhere were not to be seen. Such a paucity of species must have been very noticeable to a sojourner at the New Forest during this time, and cannot have failed to arouse his curiosity to know the meaning of what appears at first sight incomprehensible. Disappointment so often falls to the lot of the entomologist in this fickle climate of ours, that the more advanced among us begin to look upon it as the most likely thing to occur when an excursion, having for its object the acquisition of some required species, is planned. Of course he will set off his many pleasant surprises on the other side, and it is to these that the science of Entomology is much indebted for its fast-increasing votaries. Even this latter was not vouchsafed to those who followed their usually pleasant amusement in the locality named, and the apparition of a few *Satyrus hyperanthus*, *Lycaena ægon*, *Hesperia sylvanus*, *H. linea*, and *S. janira*, failed to cheer the eager entomologist in search of such interesting varieties of *Argynnis paphia* and *Limenitis sibylla*, as are so often exhibited by those who have visited the New Forest. To say that even the two last-named species were scarce would be but to give an accurate account, for during a stay of ten days hardly two dozen of either were observed, and that in places

where they are usually so plentiful that a few hours' sport is generally sufficient to satisfy the most ardent advocate of the exchange system. One's hopes naturally turn to the other "good things" found on the wing there at this season, but only to be again met with disappointment. Such species as one naturally expects to find—as *Selenia illustraria*, *Acidalia inornata*, *Hyria auroraria*, *Acosmetia caliginosa*, *Heliothis dipsacea*, *Lithosia mesomella*, *Liparis monacha*—were not on view; and a very small number of *Ypsipetes impluviata*, *Eubolia palumbaria*, *E. mensuraria*, *Hemithea thymiaria*, failed to make amends for *Boarmia roboraria*, *Euthemonia russula*, *Heliothis dipsacea*, and *Aspilates strigillaria*; nor did an occasional *Zygæna filipendulæ* tend to lighten the gloom in our minds caused by the absence of *Z. meliloti*. "Try the flowering ragwort, the waving grass-tops, the sweet-scented, ever tempting bloom of the bramble," wrote a kind entomologist to whom we had written; but his advice, although strictly followed, proved useless, except in one solitary case, when we found, on the undergrowth near an alder, a few *Geometra papilionaria*. An occasional *A. aversata*, *Melanthia albicillata*, *Pseudopterpna cytisaria*, *Phorodesma bajularia*, *B. repandata*, were seen, but few and far between; and but one or two of *Pericallia syringaria*, *Cleora lichenaria*, and *Selenia illunaria*, were secured. A visit to these parts without seeing a few *Leucania turca*, *L. quadra*, *Catocala promissa*, and even *C. sponsa*, on the sugared trees, is certainly worth recording, for every account of a visit at this season is almost sure to number them in its list. Such an account as that given above ought to be explained by those who profess to know all about the cause and effect of the abundance or scarcity of species; and although I refrain from venturing an opinion at present upon the reason of such abnormal scarcity, yet I shall be pleased to hear the opinion of those who are generally looked upon as being able to elucidate such questions; for the usual answer that "things are scarce" is hardly, to my mind, a satisfactory one.—W. H. WRIGHT; Secretary's Department, Inland Revenue, Somerset House, W.C.

NOTES FROM YORK.—Seeing that the reports from the South of England are very discouraging as to the scarcity of Lepidoptera for that part of the season already past, I have thought that a few notes from the North might be of some interest to entomologists, at the same time feeling sorry that the efforts

of our friends in the South have been crowned with such little success. It sometimes occurs to me that there is a great deal more collecting now than there was some years ago, and that the great number of captures made causes a paucity in the succeeding years; but when I look at such species as *Triphæna pronuba*, *Xylophasia polyodon*, and many others which we do not trouble to capture, and find them in decreased numbers, it seems to annihilate the idea. The early part of the season I cannot say was so profitable as the previous year, for although many common species appeared in their normal numbers, yet others were quite absent: for instance, last year where I took *Tephrosia punctulata* and *T. biundularia* in plenty, this year, after several searchings at different periods, I did not even find a solitary specimen. But as time passed along prospects began to appear a little brighter; and at the beginning of June we found, at Askham Bog, the pretty little Noctua, *Hydrelia unca*, fairly common, also *Phibalapteryx lignata*; we also took *Procris statices*; and by the middle of July insect-life seemed to be thoroughly on the move. As an example of our collecting here I have selected the night of the 24th of July as a fair representative out of several evenings upon which we worked during that month. Along with Mr. S. Walker, we arrived at our collecting-ground, viz., Sandburn, about 8.30 p.m.; and our departure took place about 12.30 a.m. During that time we captured and observed over sixty different species of our Macro-Lepidoptera. To enumerate them all would, I am afraid, occupy too much space; and I will therefore select a portion which will, I trust, convey a fair idea of what we, in our estimation, considered a tolerably good evening's work. *Lithosia mesomella* we found sitting calmly on the stems of grasses, and therefore a very easy capture. This insect was more common in the earlier part of the month, it being a matter of no difficulty to obtain two or three dozen in one night. Among my captures was a variety of this species; instead of the fore wings being dingy white they were of an orange tint, somewhat resembling the colour of *Lithosia quadra*. *Euthemonia russula* were fairly common. *Epione vespertaria* was not so plentiful as in previous years; the usual time for the flight of the males is in the early morning, from 6 to 9 o'clock, the female being very rarely taken on the wing, but is occasionally found at rest. We also took *E. apiciaria*, *Hepialus hectus*, *Metrocampa margaritata* (common),

and *Geometra papilionaria*. This latter is a glorious insect, and to see it on the wing seems to elevate one to the highest pitch of enthusiasm. We had also *Ellopiæ fasciaria* and *Phorodesma bajularia*; this latter insect, on the 10th of the month, being common for the brief space of fifteen minutes. Also *Acidalia bisetata*, *A. inornata*, *Eupithecia nanata*, *E. minutata*, *Melanthia rubiginata*, *M. ocellata*, *Scotosia undulata*, *Cidaria pyraliata*, and many others. At sugar we found no great profusion of insects, but a fair number of species: for instance, *Thyatira derasa*, *Acronycta leporina*, *Miana strigilis*, *Agrotis vallisera* (fairly common), *Leucania pallens*, *L. comma*, *Triphæna fimbria*, *Noctua plecta*, *N. c-nigrum*, *Euplexia lucipara*, *Aplecta herbida*, *Plusia chrysitis*, &c. Since that date we have been adding others to our list, including *Epunda viminalis*, *Orthosia suspecta*, *Notodonta dictæoides*, *Acidalia scutulata*, *Crocallis elingvaria*, &c. — R. DUTTON; 13, St. Saviourgate, York, August 14, 1883.

CAPTURES OF LEPIDOPTERA.—Our best captures here this year as yet are:—*Tæniocampa leucographa*, caught at sallow in April; *Notodonta trepida*, bred in May from pupæ dug last autumn; *Macroglossa bombyliiformis*, about twelve, caught in May at flowers of *Pedicularis sylvatica* (lousewort); *Acronycta alni*, at sugar in June; *Tethea retusa*, bred in July from larvæ found in the spring.—(REV.) C. A. SLADEN, Burghclere, Newbury, August 1, 1883.

VISITORS TO HONEYSUCKLE.—The number of species which visit this plant does not appear to be very large, yet a few good kinds may generally be obtained, the three following species, characteristic of this flower, being always present in greater or lesser numbers during the season:—*Chærocampa porcellus*, *Cucullia umbratica*, and *Plusia iota*. This year I have taken several specimens of *C. porcellus*, thirteen *Cucullia umbratica*, and sixteen *P. iota*. These species were all caught during three evenings at about half-past 9 p.m. The *C. porcellus* I have never found later than 8 o'clock. The best time is half an hour earlier. Last month (June) it was somewhat less numerous than usual, while *P. iota* was very abundant. In 1879 I was very successful at honeysuckle, capturing about a dozen of *C. porcellus* on each of six consecutive evenings.—HERBERT E. NORRIS; St. Ives, Hunts, July, 1883.

VARIETY OF ARGE GALATHEA; HESPERIA ACTÆON IN CORNWALL; EUPITHECIA TOGATA IN WILTSHIRE.—I took last year, near Marlborough, an odd variety of *A. galathea*, in which all the black markings were “Indian red,” and the ground colour pale yellowish green. Some years back I took *H. actæon* in some numbers at Truro, Cornwall, in good condition and quite unmistakable; but have not seen it there since. Towards the end of June this year I took one *E. togata*, in good condition, at Severnake Forest; the red bands are very distinct.—E. F. BENSON; Addington Park, Croydon.

LYCÆNA ACIS IN SOUTH WALES.—In company with the Rev. C. T. Crutwell, I was fortunate in capturing a specimen of this rare butterfly in fair condition, flying over thyme, at Tenby. The following day I visited the spot again under most unfavourable circumstances, the wind blowing quite a gale. I saw a second specimen, and got it in the net; but being over careful in trying to box it, to my regret it slipped through my fingers, the wind taking it out of sight. Perhaps some of your correspondents can inform me if it has been taken before in South Wales, as I am under the impression that I have seen it recorded from there.—W. EDWARDS; Great Malvern, August 15, 1883.

[In Newman's ‘British Butterflies’ (p. 133) we read:—“Glamorganshire. In 1835, 1836, and 1837, I could take *Acis* in plenty, but have not seen it since.—*T. Parry*, *Merthyr ‘Intelligencer,’* vol. vi., p. 28. Croesgid, near Llantrissant, rare.—*Evan John*. I have seen, but not taken, Glamorganshire specimens.—*J. T. D. Llewelyn*. Monmouthshire. I have taken one specimen at St. Julians.—*George Lock*.” Mr. A. E. Hudd captured six specimens in South Wales in June, 1871 (E. M. M., viii. 113); and it has repeatedly been recorded in some numbers from the neighbourhood of Cardiff (Entom. viii. 161, 271; x. 5, 19; xi. 104).—E. A. F.]

DEILEPHILA LIVORNICA IN ESSEX.—A very large specimen of this fine hawk-moth was brought to me on July 30th, having been taken the day previous sitting in a cart-rut in the road outside St. James’ Street Railway Station, at Walthamstow. It is now in the collection of Mr. J. A. Clark, of Hackney.—W. J. HARPER; 66, Mansfield Street, Kingsland Road, Aug. 16, 1883.

DEILEPHILA LIVORNICA IN BERKSHIRE.—I should like to record that I took a well-marked specimen of the above-named species on July 15th. It was dipping into flowers of *Pelargonium* in a greenhouse, at dusk.—F. WALKER; Oakley House, Abingdon.

VARIETY OF EPIONE VESPERTARIA.—I had the good fortune to net, on the morning of July 29th, an extraordinary variety of the very local *Epione vespertaria* at its haunt, near to this city. The border of the wings of the insect is of a very dark purple, with the central part of the wings (which in ordinary specimens is of an orange colour, with the vein-like markings dark red) of a deep brick-colour, the vein-like markings being absent. It is a very striking variety, and is in capital condition.—SAMUEL WALKER; 8, Neville Street, Haxby Road, York.

ABRAXAS ULMATA AT LEWES.—This species occurred at the end of June in a small wood on the chalk, close to this town. I had previously thought it to be, almost exclusively, an insect of the Midland Counties. It is, I believe, quite new to this district.—J. H. A. JENNER; 4, East Street, Lewes, July 21, 1883.

CIDARIA SAGITTATA IN WORCESTER.—Whilst collecting Lepidoptera in Bewdley Forest, on June 26th, I was astonished to find this beautiful *Geometra* flying over a swamy spot at dusk. I was fortunate enough to net seven fine specimens, evidently just emerged. This, I believe, is a fresh locality for it.—W. EDWARDS; Great Malvern, August 15, 1883.

BREEDING STAUPUS FAGI.—Having bred a very fine series of the above-named species I gladly respond to Mr. J. Anderson's request in the 'Entomologist' (Entom. xvi. 182), with reference to its management while in the pupa state. My method, which I found most successful, was to place the whole of the pupæ out of doors during the winter, taking the precaution of covering them with a quantity of beech leaves: this will be seen to be the most natural way for them to pass that season. Upon the arrival of May I brought them into the conservatory, the temperature of which was very little above the average of that out of doors, and kept them slightly damped with water of the same temperature as the air in the conservatory, never allowing them to get dry. In a few days they began to emerge, and that with scarcely any failures. They will sometimes, if fed-up quickly, go through all their stages

and emerge the same season. Is it generally known that the young larvæ, although they eat nothing but their egg-shell before they undergo their first moult, drink copiously? When I bred my series it was my custom to sprinkle the food with water, and at first I was much surprised to find that they commenced upon the drops of water, looking like so many black ants around grains of sugar. I hope that the above hints may be useful to Mr. Anderson, and that he will be more successful next year.—H. JOYSON, sen.; 3, Clarendon Villas, Walthamstow, Aug. 20, 1883.

ABUNDANCE OF *SENTA ULVÆ*.—Whilst in Norfolk, last month, I came across *Senta ulvæ* in something like the numbers in which it used to be found. All varieties occurred, the plain ordinary form most commonly, of course; and then *bipunctata* and *nigrostriata* in about equal numbers and not uncommonly, with but one *wismariensis*. Insects were plentiful enough on favourable nights; but there was nothing else particularly worth noting, except perhaps the degenerate ways of *Nonagria brevilinea*, which I found in copulation with an enormous *Mania typica*; and Mr. Coben also found one in the same situation with *Celæna haworthii*.—G. W. BIRD; Hurley Lodge, Honor Oak, S.E., Aug. 15, 1883.

DESCRIPTION OF THE LARVA OF *PHYCIS ADORNATELLA*.—On the 10th of May last I received from Mr. H. B. Fletcher, of Worthing, some half-score larvæ of this species. They varied in length from three-eighths to five-eighths of an inch, the larger probably being nearly adult larvæ, and the smaller ones, which were proportionately more slender, younger specimens. The head has the lobes rounded; in the younger specimens it is about the same width, but in the older ones narrower than the 2nd segment; both it and the frontal plate are polished. Body cylindrical, and of almost uniform width; in the older examples tapering a little at the extremities. The segmental divisions are distinct, and a transverse depression on each segment gives to the skin a slightly wrinkled appearance. Ground colour of the younger specimens dull smoky black, but in the larger examples a strong tint of olive is distinctly seen through the black. Head brown, strongly freckled, and marked with very dark brown. A dark smoky black line, faintly edged on each side with slaty gray, forms the dorsal stripe; there are also two indistinct irregular lines of this pale colour between the dorsal and spiracular

regions, and a still fainter indication of the pale colour along the spiracles. In the young specimens these pale lines are scarcely discernible, even with a lens. In the young specimens the frontal plate is black, but in the older ones the olive tint shows through it also. Ventral surface and prolegs uniformly dark smoky blackish olive, the anterior legs tipped with black. Feeds on wild thyme. No imagines emerged from my larvæ; but Mr. Fletcher fortunately bred several from those he kept.—GEO. T. PORRITT; Huddersfield, August 8, 1883.

CAPTURE OF CRAMBUS MYELLUS.—Mr. William Herd has asked me to record for him the capture of two specimens of this pretty Crambus. He took them in Glen Tilt in July, and saw two other specimens, which escaped his net. Though *Crambus myellus* still remains amongst the rarer British species, it is probably because its habits are insufficiently known. The first British specimen was taken in Glen Tilt many years ago; but the first recorded one was taken near Aberdeen in 1868. It seems not to have been met with again till I took three specimens in Braemar; and though I think it has been reported from Rannoch, more details of the capture of the latter specimens are desirable before we can accept them. Mr. Herd's specimens were taken flying in the afternoon, while mine came to light. Mr. Herd has obtained a few eggs, so it is to be hoped that some light may be thrown on the life-history of the species.—F. BUCHANAN WHITE; August 7, 1883.

PHLÆODES IMMUNDANA.—Whilst returning from St. Michael's on the Wyre, about 7 o'clock last evening, I saw a lot of small moths flying from a tall alder tree. Fortunately two nets and a satchel full of boxes were in the carriage bottom. My wife had boxes ready, and my son and I had warm work of it, throwing sticks up at the boughs: some came down, and others soared upwards. However, in twenty minutes we boxed over forty specimens, the greater part being females. Having ten miles to drive and no lamps, made us leave earlier than we wished. Had it occurred to me to stand in the carriage and catch them while flying round the twigs, no doubt twice as many could have been secured. I have only taken odd specimens before. There are two broods in the year of this species.—J. B. HODGKINSON; Preston, August 20, 1883.

CRYPTORRHYNCHUS LAPATHI, *Linn.*—About two months ago the owner of a withy-bed drew my attention to many of his two-year-old withies, which were lying prostrate after a heavy gale. On examining the place where the withy was broken, I discovered that the wood had been eaten away into the centre of the stem, and on splitting the stick the culprit was discovered in the shape of a fine fat white maggot, which was feeding on the pith. By the time this larva was full-fed it had consumed about one inch and a half of the pith. I brought home about thirty pieces, and last week I opened them, and each contained a fully-developed beetle. Can any of your readers say when the beetles would have emerged, or when and where the eggs are laid? It appears to me from the size, &c., of the entrance, that it must have left some other tree; yet there did not appear to be any old tree near affected by them. I should not have disturbed them, but was very anxious to see if one was likely to produce an ichneumon, but I am sorry to say they all turned out beetles. In Cox's 'Handbook of Coleoptera,' vol. ii., p. 142, the scales mentioned therein as white, in my specimens are a beautiful pink. This may be owing to my prematurely removing them from their hiding-place; or are they pink when they first emerge, and soon get bleached to the colour mentioned?—G. C. BIGNELL; Stonehouse, Plymouth, Aug. 9th.

OBSERVATION ON THE TERMITES OF RANGOON.—As a record of an incident in the habits of the white ant coming under my own observation, I venture to lay this short note before the readers of the 'Entomologist.' The specimens and a note were laid before the Linnean Society on June 7th, 1883. About the middle of November, 1882, I noticed a cloud of termites flying about the stair of my bungalow. I found they were issuing from the ground near a termitarium under the stair. I was able to watch the process of their exit from the nest. The ground at some distance from the hill would suddenly open, and a crowd of workers appear, who seemed to be enlarging the opening. Immediately after came the long-legged males in an incessant stream, taking to flight as fast as they could spread their wings, many falling again to the ground, when they became the prey of the ants. This had not gone on for more than three or four minutes when a couple of toads appeared, and stationing themselves by the openings whence the termites issued swallowed them as fast as they appeared, while those that escaped into the

air were chased by the numerous bats that found their way to the spot as quickly as the toads. Sometimes they would cease to issue from a hole, when another would be opened by the workers. Next day I tried to open the nest. I found that all the holes whence the termites had crept had been filled up, as well as the passages with which they communicated, by the workers; and the new part had hardened so quickly that I was unable to trace the direction of the passages. The remarkable point about this is the season at which it occurred. These insects make their appearance in myriads about the beginning of the rains. The Queen's Birthday ball, at Gort House, was one year lately interrupted by them; but I have never heard of them appearing in November. The specimens sent for identification are a male, a female, and a worker, from the nest, which swarmed on November 8th, 1883, at Rangoon.—ROBERT ROMANIS.

[Mr. M'Lachlan, to whom these have been shown, says that—judging from the specimens sent, which unfortunately were injured in carriage—the species appears to be *Termes taprobanes*, Walker, or one closely allied thereto.]

NOTE ON A NEW ZEALAND ICHNEUMON.—I have observed the following curious circumstance in connection with the habits of *Ichneumon perfidiosus* on two separate occasions, and have but little doubt that it is universal. I am unable to account for it in any other way; but perhaps some of your readers, who make the economy of these insects their especial study, may readily be able to explain it. While out collecting in the neighbourhood of Wellington, on January 14th last, I observed a number of this fine species flying in and out of a crack in the bark of a large black pine. Being desirous of discovering what attracted them, I removed a large portion of the bark, and found that there were over sixty insects crowded together in the hollows and irregularities underneath. I captured several, and examined a great number of them, and found them to be all females. There was no difficulty in doing this, as the most cursory glance could not fail to detect their short ovipositors. There was no nest of any kind, the cavity being a natural one, the ichneumons not having improved on it in any way. On the other occasion I found a number of these insects under exactly similar circumstances, about five miles from here, but there were none flying round the tree. They were, as before, all females, and seemed torpid, which

was no doubt owing to the coldness of the weather. This, however, cannot be the cause of their congregating, as on the former occasion it was during the hottest weather that they were found. The only male I have ever seen was captured on a shrub during last November, and not near any black pines.—GEO. VERNON HUDSON; Palmerston, North, June 13, 1883.

REAPPEARANCE OF PHOSPHÆNUS HEMIPTERUS, *Geoff.*, AT LEWES.—This interesting beetle has again occurred at Lewes. Several specimens have been taken by my friend Mr. C. H. Morris, of this town, in his garden, and by his kindness I have been able to see the insect in a living state. The locality is not far from the place where Miss Hopley took the first British specimens in 1868. The first specimens were seen this year on June 17th, and so far only males have occurred. The insect is very active by day, crawling quickly over walls, &c.; but it readily feigns death, contracting the limbs close to the body, and falling to the ground. The males are decidedly luminous, the light proceeding from two spots on the apical segment of the abdomen, both above and below. As in the glow-worm, the light is produced at the will of the insect, and when not visible a little irritation will generally render it so. This would make it probable that the light, at least in the male, is not used as a sexual attraction, but as a means of frightening its enemies, and warding off danger. Since I formed this conclusion I have had the opportunity of observing both males and females of *Lampyris noctiluca*. In the males of this species the light is produced almost exactly in the same way as in the male *Phosphænus*, but usually the light is very feeble and hardly visible. I have found, however, that irritation will almost invariably produce it brilliantly. In the female *Lampyris* the light is more involuntary, and I have only partially succeeded in producing by irritation a re-illumination. These facts seem to show that the light of luminous insects is primarily a protection from danger; thus in the female glow-worm absence of wings having rendered it more helpless than the male, the light—the means of defence—has in a corresponding degree developed. At present I have had no opportunity of seeing the female of *Phosphænus hemipterus*.—J. H. A. JENNER; 4, East Street, Lewes, July 21, 1883.

ERRATUM.—Entom., vol. xvi., p. 188, line 12 from foot, for "*Epione vespertaria* which was getting over," read "*Epione vespertaria* which was getting well out."—G. T. P.

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LIFE-HISTORY OF *VANESSA GONERILLA*.

BY GEO. VERNON HUDSON.

ONE of the commonest, and at the same time one of the most beautiful, of the very limited Rhopalocerous fauna of New Zealand is *Vanessa gonerilla*.

The following paper, which treats of the life-history of this insect, will I trust be of some interest to the readers of the 'Entomologist.'

The eggs in shape are almost exactly like those of *V. urticae*, being of a light green colour with the ribs white, and are deposited on the leaves of a dwarf species of stinging nettle, which grows in moderately open spots in the forest, amongst the numerous ferns. It is by no means common, and is therefore very difficult to find.

The young larva, upon its emergence from the egg, is of a dusky straw colour, with the spines and head black. I am not sure of the exact duration of the first period of its life, as the only specimen I reared from the egg died two days after it emerged; but it is probably not longer than a week before its first moult occurs. During its second stage it is of a nearly uniform brown colour, the subdorsal and lateral lines being but faintly indicated. In about ten days it prepares to change its skin for the second time, constructing for that purpose a small dwelling out of a rolled leaf, which it devours when this operation is completed. After moulting, no great alteration is observable in the colouring of the larva, the stronger appearance of the white lateral lines being the most conspicuous feature. In another two weeks the third and last moult takes place, which is performed in a similar manner, and after this the brood contains no less than

four distinct varieties which are described below, the rarest taking precedence.

Of the first variety the general colour is a pinky gray, sub-dorsal line very distinct, white, with a black bar beneath it on each segment; head, belly, legs and spines, light green; there is also a conspicuous white lateral line, dividing the green from the gray, which has above it a bold black line, the space between this and the above-mentioned black bars being strongly clouded with darker gray. This variety, in common with all the rest, possesses no spines on the first segment, there being seven on the others, *viz.*, a row down the back and three on each side, the last of all having only two spines.

Of the second variety the markings are the same as in the first in every respect, except that the ground colour is of a brownish pink tint.

The third variety has the back and sides dark brown, sub-dorsal lines reduced to a chain of white bars, lateral lines distinct; head, belly, legs and spines green.

In the fourth the markings resemble the third, except that the ground colour and head are black, the belly and legs dark brown, the prolegs green, and the spines shining black.

I am at a loss to explain the cause of this singular variation, and can only state that it was not connected with a difference in food, sex, or any other external circumstance.

After these had gone through the wonderful performance of changing into pupæ they consisted of two varieties, one of a uniform light brown colour, the other black, with the dorsal half of the abdomen dark brown, the spines and extremities of the wing-cases being tawny. Both these varieties had in some cases a few gold or silver metallic spots on the prominent parts of the body. The different larval varieties changed into the two kinds of pupæ quite indiscriminately, with the exception of the first two, both of which resulted in the light brown form; but as I had but one example of each of these, it was very possibly wholly accidental.

The time between the third moult and the larva's final transformation is a little over a fortnight, the duration of the pupa state itself being from twelve to sixteen days.

I was not so much surprised at the variation of the pupæ, as I had a similar experience when rearing a number of *V. urticæ* in

1880, the pupæ of which consisted of six distinct varieties. This great diversity in the colouring of the chrysalis of this species must have been noticed by anyone who has reared it, although in all the standard works with which I am acquainted, but one description is given.

The larvæ of *P. gonerilla* are gregarious in their habits, but differ from the European species in resting and feeding on the under surfaces of the leaves, exposing as little of their bodies to view as possible. The pupa must be very closely concealed, for with the most careful searching, in places where I knew the larva had fed up, I was unable to find one. All my pupæ were taken when in the caterpillar state, and kept till they changed.

The perfect insect occupies an unusually short time in drying its wings, four hours being all that is mostly required, and on fine days it frequently was fluttering after having emerged but three hours. It is very powerful on the wing, flying against the most violent winds, and, indeed, if it were not it could never venture out at all, for in many parts of the islands it is always blowing hard.

This insect is common from February to April in most situations, but the greatest numbers are to be found in the spring months. These hybernated specimens appear as early as August, and have not all disappeared before the end of December, or middle of January, when the earliest of the new ones are just appearing. In fact, it is not unfrequent at this time to take both hybernated and recent specimens together. This species is a great traveller, seldom settling, and mostly seen flying over the tops of the trees at a great rate. It shows a singular indifference to shadow, as it is constantly flying out of the sunlight into shady places in the bush, probably in search of the food-plant of the larvæ.

Palmerston North, Manawatu, N.Z., July 13, 1883.

A SHORT VISIT TO DOVER.

BY GEORGE COVERDALE.

EARLY in July I left London one afternoon for a few hours' collecting on the S.E. coast, and arrived at my destination by six o'clock. The weather was everything that could be desired, the very boisterous wind had given place to a dead calm, and the still hot evening sunshine blazed on the opposite coast of France,

which through the clear air seemed but a mile or two away. Never in the course of my experience have I found Lepidoptera in such abundance and variety. On going through the town *Vanessa cardui* was flying commonly about the streets, their numbers, however, being but a faint indication of the hundreds, one might almost say thousands, to be met with later on. Seeing such a favourable state of affairs, I determined to make the most of it; and so worked that evening, and right through the night and all the following day, getting about twenty-five hours' continuous collecting. By seven o'clock the next evening my boxes were full, and I was somewhat thirsty.

In the following pages I shall venture to enumerate some of the species which fell to my net, as an encouragement to others who may contemplate working this well-known but by no means exhausted coast. Among the Diurni, *Argynnis aglaia* was common and in fine condition, being partial to flowers of *Centaurea nigra*. *Vanessa cardui* in large numbers, but bad condition. Fresh specimens of *V. atalanta* and *V. io* were on the wing, and *Arge galathea* was very common; *Satyrus hyperanthus* and others of the genus were visible, and I saw several worn specimens of *Thecla rubi*. *Lycæna alsus* could be counted in hundreds, and *L. corydon* was just emerging. *Hesperia sylvanus* and *H. linea* were common.

Macroglossa stellatarum visited the flowers of *Echium vulgare* in great numbers in the evening, and again in the early morning sunshine. *Hepialus humuli* was flying commonly at dusk and just before sunrise, but not throughout the night. *Zygæna filipendulæ* was extremely abundant as larvæ, pupæ, and imagines. *Nudaria senex*, *Setina irrorella*, and *Lithosia complana* put in an appearance, and *Callimorpha dominula* was continually tumbling into the net, its larvæ being plentiful on various plants. *Euchelia jacobææ* also occurred. Larvæ of *Liparis chrysorrhæa* were not uncommon on *Hippophae rhamnoides*. The females of *Odonestis potatoria* I found commonly at rest on the grass, side by side with its larva.

Among the Geometræ were *Ourapteryx sambucata*, *Acidalia scutulata*, *A. incanaria*, *A. immutata*, and *A. promutata*; and I observed that *Emmelesia albulata* was rather common amongst *Rhinanthus crista-galli*, and the capsules of *Silene inflata* produced larvæ of *Dianthæcia capsicola* and *Eupithecia venosata*. The other pugs met with were *E. centaureata*, *E. subumbrata*, *E.*

absynthiata, and *E. isogrammata* from *clematis*, from which was also obtained *Melanippe procellata* and *Phibalapteryx tersata*. *M. galiata* and *M. rivata* were common. Specimens of *Eubolia mensuraria*, *E. bipunctaria*, and *E. lineolata* turned up, the latter in abundance.

Of the Noctuæ, most of which were observed throughout the night feasting on the flowers of *Echium vulgare*, &c., there were *Leucania conigera*, *L. lithargyria*, *L. comma*, &c., *Xylophasia sublustris*, *Mamestra anceps*, *M. furva*, *Miana literosa*, *M. furuncula*, *Caradrina morpheus*, *C. blanda*, *C. cubicularis*, *Agrotis aquilina*, &c.; *Triphæna interjecta*, *Eremobia ochroleuca*, *Hadena chenopodii*, *Heliothis marginata* (very difficult to get in good condition), and *Plusia gamma*, rushing wildly about both morning, noon, and night. Of *Heliothis peltigera* I took two specimens flying round *Reseda lutea*, and a single worn representative of *Acontia luctuosa*. *Euclidia mi*, *E. glyphica*, and *Phytometra ænea* were met with.

Among the Pyralides I took a few each of *Pyrallis glaucinalis*, *Pyrausta punicealis*, *P. ostrinalis*, *Herbula cespitalis*, and *Ennychia anguinalis*, besides single specimens of *Cledeobia angustalis*, *Spilodes palealis*, *S. cinctalis*, and *Stenia punctalis* (from *Iris fœtidissima*). The other Pyrales were *Cataclysta lemnalis*, *Hydrocampa nymphæalis* (very common); and *Botys fuscalis*, *Ebulea crocealis*, *E. sambucalis*, and *Pionea forficalis* from the wild cabbage; and *Scoparia cembralis* was common amongst *Clematis vitalba*.

I took the following Crambites:—*Platytes cerussellus*, *Crambus perllellus*, *Homæosoma sinuella*, *Phycis adornatella*, *P. subornatella*, *P. ornatella*, and a couple of *Oncocera ahenella*.

The Tortrices came well to the front, being represented by *Tortrix costana*, *T. icterana*, *Penthina ochroleucana*, *P. sellana*, *Sericoris cespitana*, *Peronea rufana*, *Orthotenia striana*, *Eriopsela fractifasciana*, *Sciaphila perterana* (very abundant and variable, especially the females), *Sphaleroptera ictericana*, *Grapholitha nigromaculana*, *Hypermercia cruciana*, *Ephippiphora brunnichiana*, *E. trigeminana* (common), a few *Endopisa nigricana* in a pea-field, besides which was *Stigmonota leplastriana* flying in the sunshine amongst the cabbage in considerable numbers, but difficult to obtain owing to their rapid movements and the rough nature of the locality. *Achillea millefolium* produced *Dicrorampha petiverana* in plenty, and the *Ononis* was in some places teeming with

Catoptria microgrammana; all, however, much the worse for wear. *C. hypericana*, *C. hohenwarthiana*, and *C. scopoliana* were met with. *Eupæcilia rupicolana* and *H. angustana* were very common. *E. hybridellana* scarce, and a single *E. atricapitana* was taken. The remaining Tortrices were *Xanthosetia hamana*, *Chrosis tessarana* (swarming), *Argyrolepis baumanniana*, *Conchylis francillana* (common), *Sciaphila alternana*, *C. inopiana* (a few from *Inula dysenterica*), and *Aphelia osseana* (common). Before leaving the Tortrices I ought to mention that a species occurred amongst *Onobrychis sativa*, &c., which has since been identified as *Grapholitha cæcana*, and described in the 'Entomologist' (Entom. xvi. 195).

As the list is growing long, I will only mention a few of the Tineæ. From an old stack came *Scardia arcella*, *Tinea rusticella*, *T. albipunctella*, *Nemotois minimella* (dancing in the sunshine); *Plutella xylostella* was swarming everywhere, in some places where I could see no Cruciferæ; *Depressaria liturella*, *D. nanatella*, *D. alstræmeriella* (larva from *Conium maculatum*, and that of *Plusia gamma* from the same plant), *Gelechia cinerella*, *G. rufescentella* (common), *G. populella*, *G. desertella*, *G. acuminatella*, *D. ocellella*, *G. sequacella*, *G. tenebrella*, *G. anthyllidella*, *G. bifractella*, *G. pictella*, and *G. subocellella*, *Parasia neuropterella* and *P. lappella*, *Anarsia spartiella*, *Nothris durdhamella*, *Sophronia parenthesesella*, *Butalis senescentella*, *Glyphipteryx fischeriella* (in hundreds), *Douglasia ochnerostomella*, common amongst *Echium vulgare*, in company with *Coleophora onosmella*; this latter species was also taken amongst *Lycopsis arvensis*. On *Eupatorium cannabinum* the cases of *C. troglodytella* abounded, and a few *C. litella* and *C. albitarsella* turned up. *Laverna* was represented by *L. miscella* and *L. epilobiella* (larva). *Chrysocoris festaliella* and *Antispila treitschkiella* put in an appearance; and *Elachista cygnipennella*, *E. biatomella*, and *E. triatomella* were found in some numbers. Amongst the plumes were *Pterophorus bertrami*, *P. acanthodactylus*, *P. parvidactylus* (common), *P. phæodactylus*, *P. serotinus*, *P. plagiodactylus*, *P. lithodactylus*, *P. lienigianus*, *P. microdactylus* (common), *P. baliodactylus*, *P. tetradactylus* (common), *P. pentadactylus* (swarming), &c.

The expedition resulted in the capture of over three hundred specimens, and this number could easily have been doubled but for want of pill-boxes. As it was, several *A. aglaia* had to be packed in one box, and four or five *M. stellatarum* in another, an operation

not calculated to improve their condition; for one of the number becoming rather lively on the way home added nothing to his own appearance, and nearly spoilt his neighbours'. Looking through my journal I see that 220 species were observed during the trip, and many others must have been overlooked in so hasty a visit, making about the best day's collecting I ever remember.

24, Fleming Road, Lorrimore Square, S.E., August 15, 1883.

A WEEK AT WITHERSLACK.

BY ARTHUR J. ROSE.

DURING the early part of July I spent a week at that delightful place known as Witherslack. I had never been northward for an entomological trip, so after reading the many accounts by Mr. Hodgkinson in this Journal I decided to spend a part of my annual holiday there. On my way I had the pleasure of calling upon that gentleman, who with his wonted kindness gave me much useful information.

On arriving at Grange-over-Sands, a very delightful seaside place on the north-east shore of Morecambe Bay, Witherslack may be found about four miles on the Kendal Road. It is a straggling little village, surrounded by rocky broken ground, mountains, and moorland. I was much struck with the profusion of flowers, which gave the place the appearance of a good entomological locality.

My first outing was to the Moss nearest the Inn, and the day being warm, although dull, I found *Chortobius davus* flying pretty freely and in splendid condition. The surface of the Moss is, however, very uneven, and it is quite useless to attempt to chase an insect which you have missed, and in addition you run the risk of an accident. *Aspilates strigillaria* and *Acidalia fumata* were flying over the heath in plenty, with an occasional *Anarta myrtilli* and *Scodiona belgiaria*, and I also knocked up a few *Euthemonia russula*. About the third day of my stay *Hyria auroraria* began to emerge, and I captured during my sojourn there some fifty specimens in lovely condition. I tried sugar in the evenings, but with absolutely no success, and I contented myself with dusking round some old yew-trees on the bank near the Inn. Here I obtained a good series of *Eupithecia constrictata*

and a few *Cidaria fulvata*, *C. pyraliata*, *Emmelesia affinitata*, *Anaitis plagiata*, and *Caradrina cubicularis*; while on all the walls in the neighbourhood the larva of *Nudaria mundana* was in abundance. On this same bank in the daytime I captured a nice series of *Lycæna salmactis*, several *A. plagiata*, and two *Photedes captiuncula*. *L. alsus*, judging from the number of faded specimens, had been plentiful. By searching the rocks on broken ground where the foxglove abounded *E. pulchellata* was to be found, and also *Pseudoterpna cytisaria*; and at dusk in the locality there were a few *Hepialus velleda*. I visited this place as early as seven o'clock in the morning on two occasions, and found *Argynnis adippe* on the wing.

I then started off for a tour of the English lakes, being also desirous of obtaining *Erebia epiphron* from one of the many localities in which it exists and through which I should pass. However, at Red Screes Mountain, one of its head-quarters, nothing but rolling clouds and pelting rain was forthcoming, and during my ascent of Helvellyn the weather was not much more favourable. At the foot of Griesdale Tarn *Tanagra chærophyllata* was in great plenty flying among the long bracken, and indeed on most of the mountains I found this insect abundant and in good condition. Here I was pleased to take a species of the Geometræ new to me, viz. *Coremia munitata*, and I searched about for some time without meeting with another specimen. However, about two days later, while nearing the summit of Skiddaw, some 3000 feet above sea-level, I again saw several, but having no net I only succeeded in boxing two or three. The weather was very stormy and unsettled, but I am convinced that anyone having a companion with him might do very well on the mountains; but it would be wretched work alone. I searched thoroughly for *E. epiphron* in the neighbourhood of Langdale Pikes, but with no success. I believe one must know the exact spot for it, as the mountain chain is very extensive at that part.

I then returned to Witherslack for three days, having previously searched some hours in vain after *E. tæniata*, but again the weather did not allow me to obtain it. On the Moss at Witherslack I found that during my week's absence *A. fumata*, *A. strigillaria* and others were quite over; but *Carsia imbutata* was fresh from the chrysalis, and I obtained a beautiful series of this pretty insect. By beating the birch-trees I obtained two

Platypteryx falcata and one male *Geometra papilionaria*. I observed large numbers of the larva of *Bombyx callunæ* sunning themselves on the heaths, but they were all ichneumonized. On the bank facing the Inn *A. aglaia* was flying in plenty, and without any trouble I caught two dozen in one morning.

As many of my friends who have spent their holidays in the South of England met with much disappointment, I hope that the above notes will prove of interest to some of the readers of the 'Entomologist'; and although the list of captures is not extensive, yet it will show that species were not totally absent, as has been the case in the New Forest.

36, Bodney Road, Hackney Downs, E., August 25, 1883.

INTRODUCTORY PAPERS ON ICHNEUMONIDÆ.

BY JOHN B. BRIDGMAN AND EDWARD A. FITCH.

No. III.—CRYPTIDÆ (*continued*).

PEZOMACHUS, *Grav.*

DIVISION 1.—Aculeus at the most not much longer than the 1st segment of abdomen.

A. Metathorax without a transverse ridge separating the upper from the back or slanting part.

I. Abdomen densely covered with hairs, and their pits.

a. Abdomen with coarse punctures.

* Abdomen entirely red. - - 1. *vulpinus*, $1\frac{1}{2}$ —2 lines.

** Abdomen black from the 2nd segment. - - 2. *Neesii*, 2 lines.

b. Abdomen with fine punctures.

* Upper part of the metathorax very short.

† Spiracles of the 1st segment of abdomen projecting.

Base of antennæ, thorax, segments 1st and 2nd, and legs, red.

3. *Ratzeburgi*, $1\frac{1}{3}$ line.

†† 1st segment of abdomen with spiracles not projecting.

‡ Mesothorax without a trace of scutellum.

Insects black, legs piceous.

§ Mesothorax and metathorax of equal lengths. - *hieracii*, $1\frac{3}{4}$ line.

§§ Metathorax about half as long as the mesothorax. 4. *tener*, $\frac{3}{4}$ line.

†† Mesothorax with indications of a scutellum.

Insect black-brown. - - - 5. *festinans*, $\frac{4}{5}$ —1 line.

** Upper part of the metathorax not unusually short.

× Mesothorax longer than the metathorax.

Insect black. - - - 6. *anthracinus*, 1 line.

×× Mesothorax not longer than the metathorax.

o Greater part of insect reddish yellow.

- Head, three bands on abdomen, apex of antennæ, and apex of hind femora and tibiæ, dark. - - - 7. *zonatus*, $1\frac{1}{2}$ line.
- oo Insect almost entirely black-brown.
- 1st segment of abdomen yellow. - - - 8. *timidus*, $\frac{3}{4}$ line.
- ++ 1st segment of abdomen black brown. - - - *nigritus*, 1 line.
- II. Abdomen clothed with scattered hairs.
- a. Metathorax very short; insect piceous.
- * Mesothorax of ordinary length. - - - 9. *pumilus*, $\frac{4}{5}$ line.
- ** Mesothorax as short as the metathorax. - - - *brevis*, 2 lines.
- b. Metathorax of ordinary length.
- † The fourth joint of antennæ longer than the third.
- ‡ Thorax red.
- Legs and base of abdomen red. - 10. *Kiesenwetteri*, $1\frac{1}{4}$ — $2\frac{1}{4}$ lines.
- †† Thorax and abdomen black.
- § Legs red; aculeus quite as long as 1st segment of abdomen.
11. *ecarinatus*, 1 line.
- §§ All the femora and hind tibiæ more or less brown; aculeus at least one-fourth shorter than the 1st segment. 12. *forticornis*, $1\frac{1}{2}$ line.
- †† The third joint of antennæ as long as the fourth, or a little longer.
- Brown, legs yellow; 1st segment of abdomen and femora brownish yellow. - - - 13. *posthumus*, $\frac{3}{5}$ line.
- B. Metathorax with a more or less distinct transverse ridge, which separates the upper from the back or slanting part.
- I. The slanting part (or that portion below the transverse ridge) much shorter than the upper part.
- a. Abdomen clothed with dense pubescence.
- Black, legs red; thorax elongate. - - - 14. *nigricornis*, $1\frac{1}{2}$ line.
- b. Pubescence on abdomen scattered, not dense.
- * Legs entirely red.
- Base of antennæ, thorax, 1st two and part of 3rd segments, red.
15. *bellicosus*, $2\frac{1}{2}$ lines.
- ** Legs not entirely red, but more or less brown; thorax red.
- † 1st segment of abdomen red. - - - 16. *pulicarius*, $2\frac{1}{5}$ lines.
- †† 1st two segments of abdomen red. - - - 17. *acarorum*, $2\frac{1}{5}$ lines.
- II. The posterior or slanting part of the metathorax of ordinary length, or long.
1. Pubescence on the abdomen dense, at least on the three 1st segments.
- a. Aculeus about as long as the 1st segment.
- * Spiracles on the 1st segment of the abdomen distinctly projecting.
- Antennæ, thorax, 1st two and part of 3rd segments and legs, red.
- Hemimachus trux*, $1\frac{1}{4}$ line.
- ** Spiracles on the 1st segment not distinctly projecting.
- † Abdomen, as well as thorax and legs, entirely red, or reddish yellow.
- ‡ Head red, or reddish yellow.
- § Head darker than the thorax. - - - 19. *carnifex*, $1\frac{1}{2}$ line.
- §§ Head not darker than the thorax. - - - 20. *rufulus*, 2 lines.
- †† Head black.
- × The 1st segment of the abdomen with slightly but distinctly projecting spiracles; the sheaths of the aculeus brown at the apex.
21. *ochraceus*, $1\frac{1}{4}$ line.
- × × The 1st segment without projecting spiracles; sheaths of the aculeus entirely brown. - - - 22. *corruptor*, $1\frac{1}{2}$ line.

- †† Abdomen not entirely red.
 - o The 1st segment only red, or reddish yellow.
- + Metathorax much longer than the mesothorax.
 - Thorax and legs reddish yellow. - - - 23. *modestus*, $1\frac{1}{4}$ line.
- + + Metathorax not much, or not at all longer than the mesothorax.
 - + + Hairs on the apical portion of the abdomen somewhat scattered.
 - Thorax and legs red. - - - - - ? *distinctus*, $1\frac{1}{4}$ line.
- + + + Hairs on the apex of the abdomen not scattered.
 - ∞ Mesothorax with an imperfectly defined scutellum.
 - Thorax more or less red or brown; legs partly brown.
 - ? *intermedius*, $1\frac{3}{4}$ line
 - ∞ ∞ Mesothorax without a scutellum.
 - Middle and hinder tibiæ more or less marked with brown at the apex and before the base; antennæ dark red, or brown-red.
 - ! Thorax light red; 1st segment of abdomen the same colour.
 - Mülleri*, $1\frac{1}{2}$ line.
- !! Thorax dark red or brown; 1st segment lighter. - *incertus*, 1 line.
- oo The 1st two segments red.
 - Head lighter or darker red.
 - Reddish yellow; 3rd and 4th segments of abdomen brownish.
 - juvenilis*, 1 line.
- ooo The 1st three or four segments red.
 - Base of antennæ, thorax and legs, red; hind knees and apex of hind tibiæ brown. - - - - - *xylochophilus*, $1\frac{1}{2}$ line.
- b. Aculeus longer or shorter than the 1st segment of the abdomen.
 - a. Aculeus shorter than the 1st segment.
 - * Thorax and abdomen black.
 - Base of antennæ and legs red. - - - - - 24. *agilis*, $1\frac{1}{4}$ line.
 - ** Thorax and abdomen not entirely black; the metathorax not, or but little, longer or shorter than the mesothorax.
 - † 1st segment of abdomen with distinctly projecting spiracles.
 - Thorax with an imperfectly-formed scutellum.
 - Base of antennæ, thorax, 1st segment of abdomen and legs, red.
 - 25. *bicolor*, almost 2 lines.
 - †† Spiracles on the 1st segment of abdomen not, or scarcely, protruding.
 - † Thorax entirely red.
 - Black-brown; base of antennæ, thorax, 1st three segments of abdomen and legs, red. - - - - - 26. *viduus*, $1-1\frac{1}{3}$ line.
 - †† Thorax partly red and partly brown; without a trace of scutellum.
 - 1st segment of abdomen without projecting spiracles.
 - § Red; head, apex of antennæ, metathorax, and abdomen from the 3rd segment, black.
 - Aculeus hardly half as long as the 1st segment.
 - micrurus*, $1-1\frac{1}{4}$ line.
 - §§ Black; base of antennæ, prothorax and mesothorax, petiole and legs, red.
 - Aculeus somewhat shorter than the 1st segment.
 - 27. *providus*, $1-2$ lines.
- b. Aculeus distinctly longer than the 1st segment; thorax red.
 - * 1st segment only of the abdomen red.
 - Base of antennæ and legs red. - - - - - 28. *cautus*, $1\frac{1}{2}$ line.
 - ** 1st two segments red.

- Antennæ and legs red. - - - - 29. *transfuga*, $1\frac{1}{2}$ line.
2. Pubescence on the abdomen scattered.
- a. Thorax entirely or greater part black.
- a. Aculeus as long as, or scarcely longer or shorter than, the 1st segment of the abdomen.
- × Seventh joint of the antennæ longer than broad.
- * Abdomen black; only the 1st segment more or less red.
- † Prothorax, petiole, and the segments, narrowly red-margined; the legs red, hind ones partly brown.
- Hemimachus instabilis*, $1\frac{1}{4}$ —2 lines.
- †† Thorax more or less red or brown, also the 1st segment; legs red and brown. - - - - 31. *detritus*, $\frac{4}{5}$ line.
- ** At least two of the abdominal segments red.
- † Mesothorax red.
- Black; base of antennæ, 1st two segments of abdomen, and legs, red.
32. *pedicularius*, 2 lines.
- †† Thorax entirely black.
- Antennæ, 1st to 3rd segments of abdomen, and legs, red.
33. *cursitans*, 2 lines.
- b. Aculeus shorter than the 1st segment.
- Black; base of antennæ, prothorax, mesothorax, 1st, 2nd, and base of 3rd segments of abdomen, and legs, red; hind femora brown.
- × × Seventh joint of antennæ just as broad as long.
34. *vagens*, 1—2 lines.
- Black; base of antennæ, apex of all the segments, and legs, red.
30. *spurius*, $\frac{4}{5}$ line.
- b. Thorax entirely or greater part red.
- a. Aculeus as long, or about as long, as the 1st segment.
- * 1st segment of abdomen red.
- Black-brown; base of antennæ, thorax, and legs, dirty yellow.
35. *gracilis*, 1 line.
- ** Several of the segments of the abdomen red.
- † Seventh joint of the antennæ not, or hardly, longer than broad.
- Base of antennæ, thorax, segments 1st to 3rd, and legs, red; hind femora brownish. - - - - 36. *latrator*, 1 line.
- †† Seventh joint of antennæ distinctly longer than broad.
- † Abdomen red, with only one segment black.
- 3rd segment black; legs red. *Hemimachus fasciatus*, $1\frac{2}{3}$ —2 lines.
- †† 1st to 3rd segments of abdomen red.
- Thorax without scutellum; 1st segment of abdomen with projecting spiracles: base of antennæ, thorax, and legs, red.
37. *lepidus*, 1 line.
- b. Aculeus longer or shorter than the 1st segment.
- × Aculeus decidedly shorter than the 1st segment.
- * Thorax, 1st segment, and greater part of legs, red.
38. *Stevenii*, 2—2 $\frac{1}{2}$ lines.
- ** Base of antennæ, thorax, 1st four segments, and greater part of legs, red. - - - - 39. *canaliculatus*, $1\frac{1}{2}$ line.
- × × Aculeus decidedly longer than the 1st segment.
- Line on the metathorax faint.
- Base of antennæ, thorax, 1st two or three segments, and legs, red.

- * Legs entirely red. - - - - - 40. *insolens*, 1½ line.
** Apex of the hinder femora, middle and hinder tibiæ, brown.
geochores, 1⅔ line.

DIVISION 2.—Aculeus a little more than half the length of the abdomen.

Black ; thorax and petiole red. - 18. *Hoffmanseggii*, 2 lines.

A. Mesothorax without a scutellum.

The 1st segment of abdomen with the spiracles projecting; reddish yellow, the head and abdomen from the 3rd segment black.

Hem. avidus, $1\frac{2}{3}$ line.

B. Mesothorax with a distinctly defined scutellum.

a. The 1st segment of abdomen with the spiracles projecting very much. Head much broader than the thorax; transverse ridge of metathorax distinct from side to side; the back part of the metathorax somewhat shorter than the upper part.

Black-brown; base of antennæ, prothorax and part of mesothorax,
1st and 2nd segments of abdomen, and legs, red.

41. *lustrator*, $1\frac{1}{4}$ line.

b. The 1st segment of abdomen with the spiracles moderately projecting.

* Legs black-brown.

Black. - - - - - 42. *angustus*, $\frac{4}{5}$ line.

** Legs reddish yellow.

Reddish yellow; head and abdomen from the 3rd segment black.

43. *insidiosus*, 1 $\frac{2}{3}$ line.

c. The 1st segment of the abdomen with the spiracles not projecting.

* Insect very narrow and elongated.

Black; legs partly piceous. - - 44. *linearis*, 1—1½ line.

** Insect broader.

† Abdomen with scattered pubescence.

Black; base of antennæ, part of prothorax, apex of 1st and 2nd segments, and legs, reddish yellow. - 45. *indagator*, $1\frac{1}{4}$ line.

†† Pubescence on abdomen not scattered.

† Abdomen black, or no segment entirely red.

Black; base of antennæ, part of mesothorax, apex of 1st and 2nd segments partly, and legs, reddish yellow. 46. *ageletes*, $1\frac{3}{4}$ line.

‡‡ Abdomen with at least one segment entirely or greater part reddish yellow.

Metathorax with a distinct transverse ridge.

§ No segment entirely yellow.

Black-brown; base of antennæ, part of thorax, 1st and 2nd segments of abdomen, and legs, reddish yellow. - ? *conveniens*, $1\frac{1}{2}$ line.

§§ The 1st segment reddish yellow.

Black; base of antennæ, part of thorax, 1st segment entirely, sides of 2nd, and legs, reddish yellow. - - 47. *secretus*, $1\frac{1}{4}$ line.

§§§ The 1st three segments entirely yellow.

Reddish yellow; sides of thorax and abdomen from the 4th segment black. - - - - - 48. *dysalotus*, $1\frac{1}{2}$ line.

Thirty-five species of this genus are included as British in Marshall's 'Catalogus' (1870), but this number is increased to forty-eight in the 1872 catalogue. *P. nigratus*, Foerst., *P. distinctus*, Foerst., *P. intermedius*, Foerst., *P. incertus*, Foerst.,

P. mülleri, Foerst., *P. juvenilis*, Foerst., *P. micrurus*, Foerst., *P. procursorius*, Foerst., *P. xylochophilus*, Foerst., *P. analis*, Foerst., *P. geochares*, Foerst., *P. brevis*, Bridgm., and *P. hieracii*, Bridgm., have since been added (see Trans. Ent. Soc. Lond., 1881, pp. 155-7; 1882, pp. 147-8; 1883, pp. 161-4). Thirteen species are figured on plates 12 and 37 of Vollenhoven's 'Pinacographia.' The interesting economy of the *Pezomachi* having been lately noticed in these pages (Entom. xvi. 49), it does not seem necessary to again refer to it; and a list of species, with their hosts, can but be to a great extent inaccurate, owing to the erroneous determinations and doubtful synonymy of the older authors. *Pezomachi* have been bred from various Lepidoptera, especially *Psychidæ* and other case-bearers, from a few Coleoptera and Tenthredinidæ, from *Microgaster* cocoons and the egg-bags of spiders; and several species (*P. vulpinus*, *P. pumilus*, &c.) appear to be connected with various ants, which they so much resemble.

ENTOMOLOGICAL NOTES, CAPTURES, &c.

NOTE ON THE SEASON.—I can fully corroborate the various complaints of the scarcity of insect life during the past summer. Many of the most common species of all orders have been almost entirely invisible in this neighbourhood. The aculeate Hymenoptera seem to get less and less every year, and even the Ichneumonidæ have this season yielded very little worth recording.—EDWARD CAPRON, M.D.; Shere, Surrey.

INSECTS IN THE VALLEY OF THE WYE.—Having been much interested in reading the notes on insects from various parts of the country which have frequently appeared in the 'Entomologist,' I have thought that others may like to see a short account of insects observed by me in the Valley of the Wye, although I have not obtained any rarities. For several years I have spent part of the month of July near the village of St. Briavels, in the extreme western part of the county of Gloucestershire. The species mentioned were observed on the banks of the Wye, from Bigsweir to Brockweir, and between the latter village and St. Briavels. This part of the country is extremely beautiful and abounds in hills and woods, and the vegetation is most luxuriant and varied. There was however an unusual scarcity of insects in

this part of the country, as there seems to have been in most other parts, this season; and the reason suggested in the 'Entomologist' for September, that it is owing to the number of collectors, cannot apply to this locality, as I have not heard of nor met with any. With regard to butterflies, *Argynnis paphia* was much less plentiful than usual. *A. aglaia* and *A. adippe* I did not see, although in former years they have occurred, but never plentifully. The local and handsome *Vanessa c-album* was very scarce this year. During some seasons I have found it generally distributed about this neighbourhood, and have frequently watched them ascend above the tops of high trees and then descend to near the ground; and I have taken two together while thus sporting. This insect occurs both in woods and lanes, and varies considerably in shade, both of upper and under side. I saw *Apatura iris* here on a former occasion, but have not seen it this year. The other butterflies I have met with this season have been species of general distribution. I may mention finding here, in 1877, a male *Satyrus janira* in copulation with a female *S. hyperanthus*, but did not obtain any ova. Moths were very scarce, with the exception of a few species. *Eubolia mensuraria* may be mentioned as one of the most plentiful. The following species have been taken here in July in former years, but they were all either very scarce or quite absent this year, viz., *Macroglossa stellatarum*, *Sesia myopæformis*, *Nudaria mundana*, *Uropteryx sambucata*, *Crocallis elinguaris*, *Cleora lichenaria*, *Geometra papilionaria*, *Timandra amataria*. The last-named species I have always found at rest on hedge-banks, and it seems to take no pains to conceal itself from view, as many others do. Among the moths of the locality which I did not see were *Minoa euphorbiata*, *Abraxas ulmata*, *Eupithecia pulchellata*, *Cidaria picata*, *C. prunata*, *Noto-donta camelina*, *Acronycta rumicis*, *Leucania conigera*, and many of the commonest Noctuæ, Pyrales and Crambites. In the pathway of a field there were hundreds of small holes inhabited by two species of bees; and I noticed a very curious insect, which when flying appeared as though enveloped in a mist. It turned out to be a gnat with remarkably long legs in proportion to its size, even for the Tipulidæ. The name of the insect is *Dolichopeza sylvicola*, and it is figured in Curtis's 'British Entomology.'—WM. PASKELL; 39, Hawkstone Road, Rotherhithe, S.E., September 15, 1883.

COLLECTING IN THE NEW FOREST.—At the end of July I returned from a week's collecting in the New Forest. It may perhaps be interesting to readers of the 'Entomologist,' who may have contemplated a visit to this favourite ground, to know what I did there. The result of my visit was most unsatisfactory; in fact, I doubt whether any week could be found during the whole season which would have produced such poor success. It is the more remarkable, as during the six weeks immediately preceding the time of my visit, I had found a very fair average of insects in all the districts I had worked, one or two species having appeared in greater numbers than usual. But at the end of the second week in July a cold north-west wind set in, which continued, with but slight variation, until the end of July. This, combined with the wet weather experienced from the 14th to the 23rd, must account principally for the non-appearance of Lepidoptera. On the other hand, larvæ and pupæ ought to have been as plentiful as usual; but though the beating-tray was in requisition for three or four days, nothing save one *Notodonta chaonia* fell under the stick; and though tree trunks were searched again and again for pupæ of *Lithosia quadra* and *Liparis monacha*, not one was to be seen. I am therefore somewhat at a loss to account for this disappearance of insect life. It was suggested by a resident in the Forest that the scarcity of imagines was owing to the prevalence of ichneumons, but in my own experience I did not observe more than the average number of these insects. Had they been more plentiful than usual, I doubt whether their increase ought to have interfered to such a great extent with the finding of larvæ. Moreover, I believe it to be the experience of most entomologists that the balance of nature is pretty evenly kept up between Lepidoptera and Ichneumonidæ, and that the one does not increase very greatly without a corresponding increase of the other. The total number of species seen by me was twenty-six. Of these, the only insects which might be called plentiful were *Satyrus janira*, *S. hyperanthus*, and *Lycæna ægon*. At sugar the total number of specimens seen were three *Leucania turca* and three *Mania maura*. This for three evenings' work! The result of one evening's sugaring near Salisbury was three *Cymatophora duplaris* and one *Triphæna pronuba*. The only Geometer which appeared in any numbers—and that really very sparsely—was *Ypsipetes impluviata*. There was one peculiarity with regard to

the time of appearance of several species. *Limenitis sibylla* was out at the end of June, whereas *L. quadra* and *L. monacha* had not put in an appearance at all at the time I left, viz., July 23rd. —J. E. TARBAT; Hammersmith, W., August 30, 1883.

NOTES ON PAST AND PRESENT.—The following notes will perhaps interest some of your readers. About the year 1876 (I cannot remember the exact date) I noticed a number of specimens of *Acontia luctuosa* at Beckenham, Kent; they were flying in the sunshine. I have often visited the locality since, but have not seen any more. In 1878 I got one specimen of *Eremobia ochroleuca* at light at Margate. In 1879 I went to Madeira for five months. The following are a few of the insects noticed there:—*Colias edusa*, *Vanessa cardui*, *Lycæna bætica*, *Deiopeia pulchella*, *Macroglossa stellatarum*, *Deilephila euphorbiæ* (the larvæ were very common), *Sphinx convolvuli*, *Leucania* (? *extranea*), *Plusia* (3 species), *Pterophorus* (1 species), &c. When returning I noticed *Plusia gamma*, *Vanessa cardui*, &c., in the St. George's Channel, many miles from land. The same year I caught a fine specimen of *Calosoma sycophanta* at Margate. This year I have taken, during the past few weeks, the following species at light at Chislehurst:—*Halias quercana* (one specimen July 29), *Pseudopterpna cytisaria*, *Scotosia dubitata*, *Noctua triangulum*, *Plusia chrysitis*, *Gyrinus natator* (it seems strange that a water-beetle should come to light, but so it was), *Platypteryx hamula* (4 specimens), *Eubolia mensuraria*, and multitudes of common species, such as *H. nictitans*, and var. *erythrostigma*, *L. auriflua*, *B. rhomboidaria*, *Crambus* (5 species), &c. The day before yesterday I caught a specimen of *L. argiolus* near Hayes. —T. D. A. COCKERELL; Glen Druid, Chislehurst, Aug. 15, 1883.

COLIAS EDUSA IN NOTTINGHAMSHIRE.—I have the pleasure to record the capture of a fine male *Colias edusa* on the 17th of this month. The specimen was evidently just fresh from the chrysalis. I may add that it is six years ago since it appeared in this neighbourhood, when we captured it in profusion.—Mrs. ALDERSON; Park House, Worksop, Notts, September 19, 1883.

COLIAS EDUSA IN GLOUCESTERSHIRE.—Having seen no notices of the occurrence of *Colias edusa* this season, I should like to record that I met with it on Saturday last, the 15th inst., flying over clover, on one of our hills; the weather was gloriously fine,

but insects by no means plentiful,—V. R. PERKINS; Wotton-under-Edge, September 18, 1883.

VARIETIES OF SATYRUS TITHONUS, &c.—I recently captured two varieties of *Satyrus tithonus*, both males. One specimen has two additional small black spots on all four wings, just inside the hind-marginal band; in the other, all that portion of the left fore wing outside the transverse brown band is bleached, the rest of the insect being quite normal. On August 16th, in Hampshire, a specimen of *Pachynemius hippocastanaria* fell to my net at dusk; last year I took the same species as early as March 18th, at Shirley. *Eubolia lineolata* seems to have the repute of being specially a coast insect. I netted several specimens in August, on the chalk downs at Warminster, in Wiltshire, a long way inland.—F. J. BUCKELL; 316, Upper Street, Islington, Sept. 17, 1883.

DEILEPHILA LIVORNICA IN SURREY.—I see that several captures of the above-named species have recently been recorded in the 'Entomologist.' Another can be added to them, as a friend of mine took a specimen in good condition last June, near Box Hill, at rest on a bramble bush.—WM. PASKELL; 39, Hawkstone Road, Rotherhithe, September 15th, 1883.

RETARDED EMERGENCE OF SPHINX LIGUSTRI.—Referring to a note on this subject in Entom., vol. xvi., p. 187, I may mention that in July of the present year I had two specimens of *S. ligustri* emerge in my breeding-cage, the larvæ of which pupated in September, 1880. It will therefore be seen that their emergence was delayed two years beyond the normal time. The bulk of the brood emerged in due course in 1881; none, so far as I can remember, in 1882. The pupæ were kept in an outhouse.—WM. J. ARGENT; Wanstead, September, 1883.

NOTE UPON DURATION OF PUPAL STAGE OF SMERINTHUS POPULI.—My son found a full-fed larva of the above-named species on the 14th July last. It pupated in a pill-box in which it was placed on the 19th of the same month, and emerged a perfect specimen on the 17th of August.—H. JOBSON; 3, Clarendon Road, Walthamstow.

SPHINX CONVULVULI AT NOTTINGHAM.—A very fine specimen of *Sphinx convulvuli* has just been taken in a garden here. The

insect is now in my possession.—W. T. WRIGHT; 40, Long Hedge Lane, Nottingham, September 5, 1883.

SPHINX CONVULVULI IN HERTFORDSHIRE.—A fine female of this insect was brought to me on 15th September; it was taken at rest on a door-plate. *S. convolvuli* occurs here and at Baldock nearly every year.—JNO. HARTLEY-DURRANT; Bancroft House, Hitchin, Herts, September 15, 1883.

SPHINX CONVULVULI IN HAMPSHIRE, &c.—On Sept. 12th a bricklayer engaged on a building in this town (Bournemouth), brought to me a live specimen of what he termed “an owl,” but which was in reality a fine specimen of *Sphinx convolvuli*. Unfortunately, having carried it fluttering in his hand, the anterior right wings got somewhat rubbed, which impairs its value as a cabinet specimen; but the fact of its occurrence is interesting, especially during this season of dearth of Lepidoptera. Perhaps I ought to mention that I noted one exception to the general scarcity of insects here this season in the case of lace wings (*Hemerobius*). These elegant creatures, with their bright green bodies, golden eyes, and iridescent and beautifully reticulated wings, literally swarmed during August. One evening I counted thirty-three specimens on one gas lamp, besides numbers flying around. It would be interesting to know whether this abundance of *Hemerobius* has been observed elsewhere, and, if so, whether its occurrence has been marked by any diminution or absence of Aphides on rose trees, &c. I believe the larva of this insect is termed the “Aphis-lion,” for no sooner do they get on the plants than they attack the Aphides with insatiable voracity, and are thus of incalculable benefit to the horticulturist.—W. McRAE.

SPHINX CONVULVULI IN ABERDEEN.—A very fine specimen of this beautiful species was taken at rest in my garden, by a little boy who brought it to me alive, on the 28th August.—JOHN MUNDIL; 22, Watson Street, Aberdeen, September 22, 1883.

ACHERONTIA ATROPOS NEAR EDINBURGH.—A specimen of *Acherontia atropos* was taken here in a grocer's shop, on September 14th. The moth is a very fine one, measuring $5\frac{1}{2}$ inches from tip to tip of the wings, the marks on the thorax being also very distinct.—A. E. J. CARTER; Joppa, N.B., Sept. 18, 1883.

NOTE ON THE OCCURRENCE OF *HEPIALUS VELLEDA*.—While staying at Okehampton, in Devon, last June, I took on the moors near there several fine specimens of the above insect. I have also taken it in two localities in Surrey, and have seen specimens from Sussex; thus it can no longer be regarded as a purely northern insect.—J. EVERSHED, jun.; Kenley, Surrey, Sept. 21.

VARIETY OF *CIRRHOEDIA XERAMPELINA*.—I have recently had the pleasure of adding to my collection a remarkable dark variety of *C. xerampelina*, which I found, on the 25th of August, at rest on an ash, evidently from its fine condition quite recently emerged from the pupa, probably not more than an hour or two before I had the satisfaction of transferring it to one of my chip boxes. The colour of the front wing is ferruginous-purple, faintly tinged with orange-yellow on the costal margin near the tips. The median band is not excavated on the inner border, and is shown distinctly by a thread-like orange line on each border, which extends from the costa to the inner margin. The hind wing is slightly darker, more rosy than in normal specimens.—T. MELDRUM; 13, Skellgarths, Ripon, September 21, 1883.

[This variety occurs regularly in the Isle of Man, and has been taken by Mr. Prest at York.—J. T. C.]

THE DISTRIBUTION OF *ABRAXAS ULMATA*.—It may interest Mr. J. H. Jenner (Entom. xvi. 211) to know that this species is by no means confined to the midland counties. I have seen specimens taken on the Addington Hills, near Croydon, and it occurs in the garden of my friend, Mr. A. R. Wallace, at Godalming, in Surrey. To my knowledge it is taken also in the neighbourhood of Horsham, in Sussex. References to entomological literature would no doubt add many other localities in the south of England. From the western counties I have received it from near Newnham, in Gloucestershire. Its occurrence in Epping Forest and at St. Osyth, in Essex, is recorded in the 'Transactions of the Essex Field Club' (vol. ii. p. lviii.)—R. MELDOLA; September 3, 1883.

LEPIDOPTERA OF UNST.—Mr. McArthur has recently returned from this, the most northern of the Shetland Islands, with an exceedingly fine lot of Lepidoptera. Although he considers the past to have been a bad season, his captures are of a very interesting character, and appear to be a typical series of the

fauna of the Island. The most remarkable moth is possibly new to science, being a large *Crymodes*, some specimens of which are nearly as large as *Petasia nubeculosa*. It is evidently a most variable species, but will probably turn out to be an extreme form of *Crymodes exulis*. As it is intended to fully describe this collection in a future number of the 'Entomologist,' this notice will suffice for the present.—JOHN T. CARRINGTON; Sept., 1883.

NOTES FROM SURREY.—I was staying during the whole of May and June in the western part of Surrey, in the neighbourhood of Camberley. I collected for the most part by day, as insects were so scarce on the wing in the evening as to make it scarcely worth while to seek for them. I found sugaring so entirely unproductive after several attempts, on what are considered favourable evenings, that I abandoned it. During daylight the prospect was not so bad, for *Argynnis selene* was to be seen in fair numbers, as was *Satyrus megæra* and the other members of the latter family, due at that time. Among the Blues *Lycæna alexis* was to be seen, and later on *L. ægon*. The usual members of the *Pieridæ* were visible, and *Anthocharis cardamines* was in more than usual numbers. Among the *Sphingidæ* I noticed *Smerinthus tiliæ*, *Chærocampa porcellus*, and *C. elpenor*; and among the *Zygænidæ*, *Zygæna loniceræ*, *Z. trifolii*, and *Z. filipendulæ*. The usual members of the *Hepialidæ* were out, *Hepialus lupulinus* in larger numbers than usual. I also took *Lithosia mesomella* and *Euthemonia russula*, and *Bombyx rubi* was as plentiful as usual. I observed a considerable number of the common *Geometræ*, the species most worthy of note being *Geometra papilionaria*, *Hemithea thymiaria*, *Ephyra pendularia*, *Hyria auroraria*, and *Eubolia palumbaria*. I also noticed *Platypteryx lacertula* and *P. falcula*. On the walls I found, as usual, *Bryophila perla*. I also saw a considerable number of species belonging to the *Noctuæ*, but none in any remarkable abundance. Most of the species taken by me were of the normal type, the only noteworthy variety being a hermaphrodite *Fidonia atomaria* with the wings of the female and with male antennæ. I also noticed some more than usually strongly marked varieties of *F. atomaria* and *Thera variata*, but my series of these two species went through almost every shade of colouring. The larva of *Clostera reclusa* was common on some small aspens, but

other larvæ were scarce with the exception of *Ypsipetes ruberata*.—E. Y. WATSON; The Ferns, Tivoli, Cheltenham, Aug. 30, 1883.

ADDITIONAL NOTES FROM CHICHESTER.—On the 19th of July I took a beautiful specimen of *Sesia bembeciformis* (*crabroniformis*) in a ditch here. It had evidently only just emerged from the pupa, which I found a few yards from the spot where the moth was flying. It was placed among the roots of *Polypodium vulgare*, growing on Sallows (*Salix caprea*). My visitors to light have been *Selenia illunaria*, *Cidaria prunaria*, *Cilix spinula*, *Calligenia miniata*, *Pyrallis fimbrialis*, *P. glaucinalis*, *Noctua rubi*, &c. A fine specimen of *Sphinx convolvuli* was captured in a shop in the town, and brought to me on Sept. 14th, and a larva of *Acherontia atropos* on the 17th, found in a garden. A single specimen of *Colias edusa* was seen flying in the garden, and *Cynthia cardui* has been somewhat abundant.—JOSEPH ANDERSON, jun.; Alie Villa, Chichester, Sussex.

SCARCITY OF LEPIDOPTERA IN QUEENSLAND.—Noticing some remarks in the 'Entomologist' (Entom. xvi. 238) on the causes of scarcity of Lepidoptera in England last season, it may be interesting to some of your readers to know that we have suffered a similar scarcity in this part of Queensland, viz., some eighty miles from Rockhampton. It appears to have been the same also in other parts, for a friend, writing from Brisbane, 400 miles further south, complains that he has not taken a single specimen of Lepidoptera this season. In the fall of the year 1882, viz., February, March, and April, our best collecting months, Lepidoptera were unusually abundant: *Pieris teutonia* and *Catopsilia pomona* literally swarmed for a time, and for a few days they fell like snow in the streets of Rockhampton; *Diadema bolina* was nearly as numerous. The larvæ of the latter swarmed on their food-plant, *Sidera retusa*. Other species were also plentiful. A mild open winter followed (we have, at times, as much as 6 to 10 degrees of frost). Our dry season, from August to November, was very wet, very few species of Lepidoptera appearing. Coleoptera were very plentiful for a short time in December and January; but after that insect-life was very scarce. The months following, which should have been wet, were very dry, herbage and water were equally scant, and only an occasional butterfly was to be seen. The only Rhopalocera, which seemed to have escaped

the general *non est*, was *Acræa andromache*, this species being more numerous than ever, and forming a pleasing contrast to the otherwise quiet monotony. In April, 1882, larvæ of various kinds were swarming on the bushes. I took, amongst others, some four dozen of a very handsome caterpillar, nearly full-fed. These changed under ground, and from them I obtained only one imago, which proved to be a new small *Sphinx*. I examined them again late in the season, and found that, although most of the pupæ were dead, several were still alive and healthy. The reason why the pupæ remained so long in that state it is difficult to say, unless it was caused by the irregularity of the season. Very few were ichneumonated, although in the fall of the season, 1882, I noticed that specimens of the Ichneumonidæ were particularly numerous; but that would be hardly sufficient to account for the utter dearth of Lepidoptera that has prevailed for the last six months.—GEORGE BARNARD; Coomooboolaroo, Duaringa, Rockhampton, Queensland, June 1, 1883.

NATURAL SUGARING.—Mr. C. V. Riley, in the 'American Naturalist,' says:—"Lepidopterists have long found sugaring—*i. e.*, the besmearing of the tree trunks with various, more or less intoxicating, sweets—one of the best means of obtaining night-flying moths, but we do not recollect of seeing any record of what may be called natural sugaring. The year 1882 has been remarkable for the excessive abundance of a yet undescribed species of *Lachnus*, which we have called *Lachnus platanicola*, infesting the sycamore. We have received accounts of its excessive abundance from widely different sections of the country, as far north as Michigan, and as far south-west as Missouri; while on trees in the grounds of the Department of Agriculture, it has prevailed to such an extent that whole trees, including leaves, branches, and trunks, were heavily blackened by the growth of the fungus (*Fumago salicina*), which developed on the saccharine exudations from the *Lachnus*. Hosts of sweet-loving insects, including all sorts of Hymenoptera during the day and chiefly Lepidoptera at night, were attracted to the trees, which even excelled those artificially sugared as collecting-ground for various Noctuids. The brilliant and glistening eyes of these moths, thickly settled upon all parts of the trees, gave these at night the appearance of being studded with gems, and produced an effect rarely witnessed, we imagine, by entomologists."

KILLING LEPIDOPTERA.—Having often thought that there is room for improvement in the killing of Lepidoptera, I this season made use of, as I think, a new method, which I have found effective for the above purpose. Having procured a bottle with a wooden cap, which answers better than an ordinary cork, I then cut up small pieces of india-rubber and soaked them in chloroform, which I found was largely absorbed by it. These pieces, after having been left in solution a day, were taken out and transferred to a dry corked bottle, and when exposed to the air they give off vapour and gradually shrink to their original size.—A. B. NORTHCOTE; Leven Terrace, Edinburgh, September 11.

HYPERACMUS CRASSICORNIS, Grav.—Last year I recorded the occurrence of the female of this insect, but neither Holmgren or Gravenhorst appear to have been acquainted with the male of it. On the 3rd of this month, while sweeping some rough grass under trees, I had the good fortune to capture a fine pair, male and female, and can now describe the sexual distinctions. The male taken is somewhat larger than the female, and in colour and general appearance is like it, but the antennæ differ in a very remarkable manner. In length they are as long as the whole insect, and are as thick as in the female, but the joints of the flagellum, instead of being transverse as in the latter, are all longer than broad. The first four are subequal and about three times as long as broad; the fifth is one-third shorter than the fourth, and they then gradually decrease in size until the penultimate, which is about one-third shorter than the apical. At the apex of the fourth and the base of the fifth is a small smooth excavation, the two together forming a distinct notch, very similar to the antennæ of the males of the genus *Lampronota*, but the thick legs, protuberant face, and shortness of the aculeus in the female refer it to the *Exochi* group of the Tryphons. Holmgren's definition will, however, now require alteration, as he separated the genus from *Exochus*, on account of the first joint of the flagellum being transverse in the female, not being aware that in the other sex such was not the case. The notch in the male antennæ is a much better characteristic.—EDWARD CAPRON, M.D.; Shere, near Guildford, September 3, 1883.

[Brischke describes the male of this species, especially referring to the structure of the antennæ, in 'Schrift. d. naturf. Gesell. in Danzig,' n. s., vol. iv., part. iii., p. 108 (1878).—E. A. F.]

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NOTES FROM GIBRALTAR.

BY CAPTAIN E. F. BECHER, R.A.

I WAS staying at Gibraltar from the end of August, 1881, until July, 1882, and the following short account of the Lepidoptera observed there during my visit may not prove uninteresting to some entomologists.

I did not turn my attention much to the Heterocera, but I think that I worked the Rhopalocera fairly during my stay, and among the first species that I observed was *Papilio machaon*, which I took on the Rock on the 30th of September; and it again made its appearance during the second week of March the next year. One of the earliest butterflies to appear on the Rock is *T. rumina*, which usually makes its appearance about the beginning of March; it varies very considerably in numbers, its abundance or scarcity depending much upon the season, but it is usually fairly plentiful. The spring previous to my stay was a very wet one, and this insect was not observed at all: one of its favourite haunts is just above the Alameda Gardens, where I had no difficulty in procuring it. Among the Pieridæ I noticed *Pieris rapæ*, *P. napi*, and *P. brassicæ*, but I have no note beyond their mere occurrence. *Euchloe belemia* is fairly common on the Rock, as is also *E. euphenoides*, the latter of which appears about the commencement of March, and is especially common in the Cork Woods; the first time I noted the appearance of the females was the 10th of April. I also came across an occasional *E. cardamines* in the Cork Woods; and I likewise noticed a few *Leucophasia sinapis* in the same locality, but it is not common. I also took one of the variety *diniensis* there; this species and

the two preceding I noted as observed about the beginning of April.

I may here explain, in respect to my reference to the Cork Woods, that they are situated in Spain, about six miles from Gibraltar, and, unless I make special mention of any species occurring on the Rock, it may be understood that I have not noticed it there.

About the second week in March I took *Colias edusa*, but I had also taken it in the Cork Woods the previous September, and that commonly; also the variety *helice*, but I did not find it in any numbers. One of the most beautiful of the Rhopalocera, and also one of the commonest, both on the Rock and in the Cork Woods, is *Gonepteryx cleopatra*, and I noted its appearance during the second week in March; I also took it among the cork trees on the 16th September the previous year. *Vanessa polychloros* does not occur in abundance,—in fact I have never heard of its being observed there. I saw one during my stay, and only one, that being in the Cork Woods on the 16th June. The same remark may almost be made regarding *V. atalanta* and *V. cardui*. One or two of the former are generally to be observed either on the Rock or in the immediate neighbourhood, and I first noticed it upon the Rock about the second week in March, but also in the Cork Woods in September of the previous year. The latter I have found in about the same numbers as *V. atalanta*, but I never succeeded in capturing one on the Rock, as its swift flight, over difficult and dangerous ground, always enabled it to elude me. Among the Satyridæ I have noted *Satyrus megæra* and *S. egeria* as occurring commonly. To the best of my remembrance they are found on the Rock, but unfortunately I did not take special note of their occurrence. Also the variety of *S. janira*, viz., *hispulla*, is common there. *Hipparchia fidia* makes its appearance late; I did not see it upon the Rock before the commencement of June. It is far from common, and I only saw it on the Rock, and not in the neighbourhood. I have a note of the capture of *Epinephele ida* and *E. pasiphæ* on the 5th June, they being species of common occurrence. In my local collection I have a specimen of *Cænonympha dorus*, which was given me by a brother officer, but I have never seen it alive, nor was it observed during my stay. About the commencement of March, in the Cork Woods, *Thecla rubi* may be seen commonly

while its flight lasts, which is not for long; and *T. acaciæ* is fairly numerous in the same locality about the beginning of June. Not easily distinguished on the wing from *T. acaciæ* is *T. ilicis*, but, although I only took one in the Cork Woods on June 14th, I cannot say authoritatively whether it is rare or common. Of common occurrence is *Thestor ballus*, the females appearing about the middle of March, and the males a little later. Commonly met with on the Rock is *Polyommatus phlæas*, and it may be seen about the second week in March; but the variety *eleus* is not so common, and appears later, generally towards the end of the month, the 24th, being the date upon which I first observed it. *Cupido bœticus* is common on the Rock, as is also *C. telicanus*, the latter of which I noted on the 16th June, but I also took it during the previous September in the Woods. *C. icarus* is also plentiful at Gibraltar, and may be observed during the second week in March. I have no notice of the appearance of *C. argiolus* on the Rock, but I fancy that I can remember its occurrence there, although it is fairly numerous in Spain, but, on account of its predilection for bramble, it is not so easy of capture. *C. medon* is common on the Rock: *Hesperia proto*, *Erynnis alceæ*, and another that I have not identified, I took, but am not certain of the exact locality. In the Cork Woods *Thymelicus thaumas* and *T. actæon* are numerous. *Pamphila nostradamus* I took in September in the woods, and again on the 5th June. I visited Tangier occasionally during my stay, but I was not very successful, the great drought no doubt being one of the causes. My list of captures there reached a total only of twenty-two species.

The year of my stay was unfavourable for Lepidoptera, it being a more than ordinarily dry season, the previous spring having been very wet; otherwise my list of captures would probably have been more extensive.

September 10, 1883.

TORTRICES AND TINEINA BRED AND CAPTURED IN 1883.

BY GEORGE ELISHA.

ONE is often deterred from publishing one's own practical experiences from fear of hearing it said that all that is already known; but the following few notes and list of localities may be

useful to beginners, if not to the older hands. My little contribution, however, is written for those who are not in that happily advanced state, with a desire to help them forward in a study that has afforded me many years of genuine pleasure, and perhaps save them many a useless journey, which means, in the height of the season, considerable loss of valuable time. I have experienced many such disappointments from the want of a helping hand, and often, from fear of a refusal, have hesitated to ask those who perhaps would have given the information cheerfully and with the greatest pleasure. As there are always some in that other unenviable state of mind, the practice that has obtained of late of entomologists publishing their experiences is much to be commended, if only to assist the inexperienced. Even the old hand must admit that with all his knowledge there is still a deal to learn about habits and localities of various species, and occasionally he gets a hint perhaps from the published experiences of a beginner that is extremely useful to him, for with all his perseverance and industry the ground that can be properly worked by any entomologist during an entire season is very limited.

In the beginning of the month of April, by forcing, as described by me in a former volume of the 'Entomologist,' I bred numbers of the *Lithocolletidæ* from larvæ collected during the autumn and winter months, among them *Lithocolletis lautella*, *L. cavella*, and many others from "Darn"; *L. tenella* and *Scardia carpinetella* from the hornbeams in that part of Epping Forest situated opposite the waterworks at Walthamstow. During April I bred a fine long series of *Coccyx splendidulana* and a few *Heusimene fimbriana* from oak-galls collected during January. From the salt-marshes at Southend and Canvey Island I obtained, during the autumn and winter months, larvæ of *Coleophora salinella* on *Atriplex portulacoides* and *Suaeda maritima*; *C. tengstroemella* on *Chenopodium*, *C. artemisiella* on *Artemisia maritima*, *Semasia rufillana* in seed-heads of *Daucus carota*, and *Cochylis francillana* and *Argyrolepis zephyrana* in the stems; in heads of teasel the larvæ of *Eupæcilia roseana* and *Penthina gentianana* were common; I also found larvæ of *C. dilucidana* in stems of wild parsnip, *Gelechia atriplicella* and *G. obsoletella* on *Atriplex* and *Chenopodium*, and *Gymnancycla canella* on *Salsola kali*; the cases of *C. argentulella* were plentiful on seed-heads of yarrow, and the larva of *Dicrorampha*

petiverana in the roots, all of which in due season produced fine imagines. I also found a few larvæ of *C. therinella*, but failed to rear them, being, I think, one of the most difficult species to breed. During a visit to the same locality in May I procured fine imagines of *Stigmonota composana* among clover, and *D. sequana*, *D. plumbagana*, and *D. saturnana* were common on the railway banks; and on a fine plant of *Conium maculatum* I found larvæ of *D. alstræmeriella*, which produced a fine series in July. I also obtained, during the winter, larvæ of *Ephippiphora fœneana* and *D. simpliciana* in the roots of *Artemisia vulgaris* from the lanes about Sutton, and larvæ of *C. marinipennella* on seeds of *Luzula pilosa* at West Heath, Hampstead. In Headly Lane I obtained larvæ of *G. bifractella* in heads of *Inula conyza*, and bred a fine series of *G. subocellella* by collecting the seed-heads of wild marjoram in November, and keeping them exposed to the weather during the winter; also the larvæ of *Gracilaria auroguttella* in cones on *Hypericum*, *G. semifasciella* on maple; and larvæ of *Pædisca bilunana* in birch catkins were common in their season at the same place.

During a short visit to Dover in April I found larvæ of *Psychoides verhuellella* under the fronds of ferns in the lanes near Alkham; and at St. Margaret's Bay the larvæ of *Stigmonota leplastriana* in stems of wild cabbage, *Pterophorus microdactylus* in old dried stems of *Marrubium*, and *Douglasia ocerostomella* were plentiful in dried stems of *Echium*.

On the Castle Hill at Scarborough, in June, I found the larva of *G. tringipennella* in abundance in leaves of *Plantago lanceolata*, and observed the larva of *C. alcyonipennella* swarming on every plant of *Centaurea nigra*, besides many commoner species.

At Wanstead I found the larvæ of *C. hemerobiella* on white-thorn, *C. gryphypennella* on rose, *C. genistæcolella* and *G. albipalpella* on *Genista anglica*, and *G. mouffetella* in shoots of honeysuckle; also imagines of *S. emortuella*, *Ypsolophus alpella*, *Laverna stephensiella*, *G. luculella*, and many others on oak trunks.

At Sevenoaks (in a field adjoining Bat and Ball Station) I found the larva of *Cosmopteryx drurella* in leaves of wild hop, wherever it was growing, and near the chalk-pit at Kemsing the larva of the very beautiful *Hypercallia christiennella*, in the shoots of *Polygala vulgaris*, occurred, but rather sparingly.

During a fortnight's stay at Deal, during the end of July, I captured fine specimens of *Argyrolepia musschliana*, *Eupæcilia rupicolana*, *Chauliodus illigerella*, *D. alpinana*, *Grapholita nigromaculana*, *A. badiana*, and numbers of others, to mention which would perhaps occupy too much space.

During last month I found the larvæ of *C. inflatella* tolerably plentiful in the lanes about Croydon, and this month (September) the larva of *G. inopella* in seed-heads of *Inula dysenterica* in the chalk-pit at Northfleet.

From the above few notes regarding some of the species bred this season, it will be seen that there is plenty to be done during the autumn and winter in collecting larvæ of various species, which when bred, sometimes rather freely although scarcely ever seen at large in the perfect state, amply repay for many an unpleasant journey during the dreary winter months.

122, Shepherdess Walk, City Road, Sept. 16, 1883.

A MONTH AT MORTHOE, NORTH DEVON.

By W. S. RIDING, B.A., M.D.

THE wooded combes of North-East Devon begin to be missed at Morthoe. A few ash, a few weather-beaten elms and sycamores, are all the trees of any size within a circuit of two miles. The "bare-worn ribs and joints of old starved mother earth," so graphically described by Kingsley, are covered with rough pasturage, a few cultivated fields, and moorland where heather luxuriates. The sand-hills at Woollacombe, about a mile to the south, bound together by maram grass, are the home of sea-spurge, great mullein, foxglove, and hound's-tongue; and further inland the irregular ground is filled with vegetation,—stunted privet, elder, honeysuckle, gorse, bracken, Scotch and English heather, teasel, ragwort, bugloss, willow-herb, hemp-agrimony, loose-strife, and numberless small plants.

The following notes on Lepidoptera, observed at Morthoe and the adjoining districts, refer, in point of time, to the interval between the middle of August and September 16th of the present year.

The common Diurni were all fairly represented. *Vanessa*

cardui, *V. io*, *V. atalanta*, and *Lycæna agestis* (second brood) were in abundance. A few worn *Argynnis paphia* put in an appearance occasionally. Worn imagines of *Thecla quercus* were flying about some plantations of young oak towards Braunton, and *Gonepteryx rhamni* along the hedges in the same direction. *Macroglossa stellatarum* hovered over *Centranthus ruber* on sunny days. The second brood of *Aspilates citraria* was easily disturbed in large numbers in several places; almost all the insects were males. No plants of *Daucus carota* were to be found, but bird's-foot trefoil was growing freely. Other Geometers met with were *Epione apiciaria*, *Metrocampa margaritata*, *Asthena sylvata* (worn), *Gnophos obscurata*, *Ypsipetes elutata* (several varieties), *Larentia didymata*, *L. pectinitaria*, *Melanippe rivata*, *Coremia ferrugata*, *Cidaria silaceata*, *C. russata*, *C. testata*, *Scotosia dubitata*, and *Anaitis plagiata*. The *G. obscurata* were in good condition, and much larger, darker, and with more confused markings than those taken on the chalk in the Isle of Wight. *S. dubitata* had just emerged, and retained its rosy gloss; sallow must have been the food-plant of the larva, as no buckthorn was to be seen. *Zygæna filipendulæ* was flying in the sunshine, and the empty cocoons were in countless numbers on the stems of various grasses. There are very few beech-hedges in this part of Devonshire, but from these many larvæ of *Demas coryli* were beaten. Larvæ of *Euchelia jacobææ* were feeding in great numbers on the ragwort, completely stripping the plants. Larvæ of *Bombyx rubi* and *Agrotis porphyrea* were taken on the heather, and those of *Acronycta psi* were common on various shrubs. Larvæ of *Eupithecia pulchellata* were still to be found on the flowers of *Digitalis purpurea*, but the majority had evidently gone to earth. The same may be said of those of *E. linariata* on *Linaria vulgaris*. By shaking plants of *Senecio jacobææ*, *Achillea millefolium*, *Eupatorium cannabinum*, and *Artemisia vulgaris*, larvæ of *E. castigata*, *E. centaureata*, *E. absynthiata*, *E. pumilata* could be easily obtained; and in a similar way larvæ of *E. iso-grammata* and *E. coronata* were taken from *Clematis vitalba*. Larvæ of *E. subnotata* were found on *Beta maritima* at Braunton. The larva of *Dicranura furcula* was taken near Ilfracombe. The faces of the cliffs on the coast are covered with patches of *Silene maritima* and *Crithmum maritimum*. By searching the former large numbers of larvæ of *Dianthæcia cucubali* were obtained,

feeding when young on the flower-buds and unripe capsules, and when nearly full-grown on the leaves; they for the most part changed into pupæ early in September. Larvæ of *D. conspersa* and *D. capsincola* were taken on the same plant. All these were also found, together with a few *D. carpophaga*, feeding on the capsules of *Lychnis vespertina*, *L. diurna*, and *Silene inflata*, but the great majority on these plants consisted of those of *D. capsincola*, with a good many of *Emmelesia affinitata* and *E. decolorata*. Imagines of *Bryophila perla* and *B. glandifera* were found, the former in large numbers, on old walls.

During the latter part of August sugar seemed a failure; only a few of the commonest insects were attracted. The first week in September was wet and stormy, and prevented evening excursions, but the second week was very favourable, and autumnal species began to emerge freely. I was fortunate enough to take three males and four females of *Polia nigrocincta* in fine condition. This is, I believe, the first time the insect has been taken in England, with the exception of the solitary specimen captured at Padstow in 1862, although imagines and larvæ, the latter especially, have been found pretty freely in the Isle of Man. The specimens I have seen from that locality have a less distinct black band. I was sugaring some hundred and fifty yards from the cliffs on which *Silene maritima* abounded, and at a height of about three hundred feet: *Armeria maritima* was also growing freely around. Other insects that came to sugar were *Epunda lutulenta*, *E. nigra*, *Noctua glareosa* (in large numbers), *N. brunnea*, all sorts of varieties of *Luperina testacea*, from strongly-marked specimens to those in which the lines were barely discernible, *Anchocelis lunosa*, *A. pistacina*, *A. pyramidea*, and *Stilbia anomala*, besides numbers of the commoner Lepidoptera. Two freshly-emerged males of *S. anomala* were taken; one was disturbed from heather during the daytime, and the other was found at rest on gorse at night. On the thorns of this shrub I took many insects, especially when the wind was high, as they appeared stupefied, and were easily boxed. Several females of *S. anomala* were also secured by beating the heather,—they were for the most part a little worn; from two I obtained a fair supply of eggs. Amongst the Pyralides noticed were *Herbulæ cespitalis*, *Pyrausta purpuralis*, *Scopula lutealis* (abundant in lanes), *S. prunalis*, *Scoparia cembralis*, *S. ambigualis*, *S. resinalis*, *S.*

muralis. The common Crambites were plentiful. *Peronea schalleriana*, *P. tristana*, *P. hastiana* and *P. comparana* were beaten out of hedges: *Sericoris littoralis* was flying about the sea-thrift on the cliffs towards evening. *Xanthosetia zoegana* and *X. hamana* were met with in different localities. *Depressaria alstræmeriella* was amongst the commoner *Depressariæ* beaten out of thatch. *D. umbellella*, *D. heraciella*, and *D. subpropinquella* came to sugar, and another *Depressaria* (very similar to the last named, but having a black thorax) which I have not yet been able to identify. Larvæ of *Anesychia decemguttella* were taken at Braunton Burrows on *Lithospermum officinale*. Pterophori seemed very scarce; the only ones noticed were *Pterophorus bipunctidactylus*, *P. pterodactylus*, and *P. lithodactylus*.

25, Endsleigh Gardens, N. W., Oct. 17, 1883.

NOTES FROM WOTTON-UNDER-EDGE.

BY V. R. PERKINS.

THE season of 1883 in this locality has been anything but a brilliant one for the entomologist, although it opened well, and for a short period gave promise that it would continue so. All that I can now say is, that taking it all in all, it is somewhat better than last year, and this is certainly the greatest amount of praise I can bestow. Some insects no doubt have been met with in average numbers; some few, and that a very few, have been abundant; but, taking a general survey, they have become far less numerous than during what is designated an ordinary season. Many insects which are generally considered of common occurrence have been in very limited numbers about here, and a few might be said to be rare, so very few having been noticed that they really were conspicuous by their absence; and this was notably the case with some of the butterflies. Nevertheless some good and really scarce things have turned up, as is usually the case in what is said to be a "bad" season, and we have had quality here and there where numbers were wanting.

But besides an inclement season, there are sometimes other causes which tend to reduce the numbers of insects in particular districts; for instance, in a hilly country, as this is, I know that wholesale destruction must take place at intervals, which in the

case of Lepidoptera is more noticeable than in other branches of Entomology.

There are many species which are met with on the slopes of the hills, and some of them are generally to be seen in the greatest profusion; and others occur abundantly, although perhaps not so conspicuous in appearance or habit. Most of these, without doubt, have been both last year and this anything but common, and, knowing what takes place, we at once jump to the conclusion that it is perfectly natural that the butterflies should become scarcer and disappear; for how can it be otherwise when we see all these sloping hill-sides, which during the summer and autumn are covered with long coarse rough herbage which forms admirable feeding-ground for many larvæ, but which is untouched by sheep and cattle? As the winter comes on this dries up, and then on some fine night is found all ablaze. The boys, either out of sheer wantonness, or sometimes by accident, set it on fire, and should the wind happen to be at all brisk, the fire travels, and acre after acre gets scorched or burnt; and just as there happens to be more or less herbage so the ground gets more or less burnt, and is left all bare and blackened till the spring rains come. This must of necessity destroy a great quantity of insect-life, and how any escape at all seems a mystery. But still it remains that, although some species disappear or are very greatly reduced in numbers, others do not seem to be affected by it, but come forth in their ordinary numbers; all the butterflies that occur on these slopes have been most greatly reduced in numbers. Some I have not seen at all, but, on the other hand, *Procris statice* and *Bombyx rubi* have been if anything more abundant than usual, the fires which blazed away over the ground not seeming to have affected them. The Crambidæ have also been abundant, and this is one of the things I cannot quite account for.

Now, if we turn to the woods and downs, there appeared to be, in the spring, a great abundance of small moths, and *Plusia gamma* was as plentiful here as elsewhere; so also was *Syrichthus alveolus*. *Argynnis euphrosyne* was numerous, but *A. selene* altogether absent. *A. paphia* and *A. adippe* I have not seen, but *A. aglaia* made up in numbers for the absence of both. *Vanessa cardui* was common after hybernation, and many have occurred recently. *V. io* was very plentiful, but *Nemeobius lucina* and *Thecla rubi* very scarce; while, strange to say, on August 10th *T. w-album* occurred

plentifully at the blossom of ragwort. In one of the woods we took thirty specimens of the last-named, and could have doubled that number. This Hairstreak we have not met with in this locality before. At this time also we had a great catch of *Charceas graminis*, and also of *Hydroæcia nictitans*, both these moths occurring together in the utmost profusion on one of the downs, frequenting principally the flowers of *Scabiosa succisa*.

Among the Hymenoptera I have met with one or two rare things, but I have not done nearly so well in them as I hoped I should. The spring bees came forth early, but their numbers were very limited; and the autumn has been much worse than the spring, very few having appeared. Wasps of four kinds have been far too plentiful both indoors and out; in fact they are everywhere and on everything, proving very troublesome. One day about the middle of last month I was collecting with my nephew in one of the large stone-quarries, where there was a great abundance of various flowers. We noticed the whole ground at the roots of the herbage entirely covered, I may say, with *Vespa vulgaris*. They were crawling about and over everything just like ants, nor did they use their wings when disturbed, or attempt to do so; neither did they take any notice of us, but seemed all intent after something—but what it was we could not make out. The ground over which they were crawling was in size about half an acre, and some few days after this they were as abundant in the same spot as when we saw them. I may add that their nests were especially numerous near there.

PIMPLA SPURIA, GR. ?

BY JOHN B. BRIDGMAN.

P. spuria ? — Jet black; legs red; hind tibiæ and tarsi black; the former red-ringed (front coxæ of female, all the coxæ and trochanters of the male, black). Length, 8–9 mm.

Twenty females and one male bred by Mr. W. H. B. Fletcher, of Worthing, from *Depressaria heracliæna*, September, 1883.

This insect, at first sight, is very like *P. turionellæ* in length of aculeus and colour of legs, but it is very distinct; in neuration the transverse anal nervure is the same as in *P. examiner*

and *P. turionellæ*; the claws are also the same, that is simple; the spiracles of the metathorax are oval, as in *P. examiner*. Holmgren says they are circular in *P. turionellæ*, but in my specimens they are quite as oval as in *P. examiner*; the cheeks are also long, as in the two other species. In *P. turionellæ* the mesopleura is smooth and shining, as it is also in *P. spuria*; this latter, whilst having in the female the red hind coxæ of *P. turionellæ*, differs from it in having the antennæ quite black, longer, and thinner at the apex; the face is more glabrous, with faint indications of puncture; in *P. turionellæ* the face is distinctly punctured, the antennæ red or red at the base. It also differs from *P. turionelle* and *P. examiner* in having the ring on the hind tibiæ red and not white, as in the other two species, and it is much narrower. Thomson ('Opuscula Entomologica,' p. 747) describes a species as *P. strigipleurus*, which he says differs from *P. turionellæ* in having a red ring on hind tibiæ instead of a white one, and the mesopleura striated; although *P. spuria* has sometimes very faint indications of striations, it can hardly answer to "mesopleura striated"; he makes no special mention of the black coxæ of the male, and as he mentions the female specially (about length of aculeus, &c.), one may infer he had both male and female; I think therefore that his species is not the same as that now bred by Mr. Fletcher. *P. spuria*, Gr., Holmgr., is included in Mr. Marshall's catalogue as a synonym of *P. turionellæ*.

Herr Brischke, in his list of Ichneumons of East and West Prussia, quotes a variety of *P. examiner* with red hind coxæ: this may be a variety, or it may be a distinct species. Nearly all my specimens of *P. turionellæ* unfortunately are plastered on to cards, so that I cannot examine them at present as closely as I could wish; still, from such examination as I can make, I do not feel certain that there is not more than one species amongst them; one has much stouter legs than the others. From my recent experience it is evident that insects of this genus ought to be pinned, or, if too small, mounted on the apex of a triangular strip of card, so that the under sides can be easily seen. If they are pinned, a fairly long stout pin should be used, and not the short thin abomination at present almost universally used by British lepidopterists: I prefer Tayler's No. 7, and set the insect half-way up the pin.

I have to thank Mr. Fletcher not only for these, but many other bred Ichneumons, a list of which, with their hosts, I hope to publish later on when I have had time to examine them.

Norwich, October, 1883.

ENTOMOLOGICAL NOTES, CAPTURES. &c,

NOTES FROM SHREWSBURY AND NORTH WALES.—My record of this year's work is of a very meagre nature, for our hopes of a good season, of which there was every promise in the early spring, were never realised. A fine and mild April was followed by several weeks of cold, with heavy gales and rain, *Anthocharis cardamines* being very scarce; in fact all the early species were most conspicuous by their absence. June opened well with several scorching days, but only to be succeeded by an extraordinary fall of temperature early in July, fires being in use for several days, and overcoats a necessity. The consequence was that *Satyrus hyperanthus*, *Argynnis aglaia*, *A. adippe*, and *Thecla quercus*, were fully a month late, and then appeared only very sparingly. On the 18th August I started for Llandudno, and was favoured with ten consecutive days of brilliant sunshine, which, however, only helped to show the dearth of insects more clearly. I took a fair series of *Lycæna agestis* in fine condition, including a curious variety, something between *L. salmacis* and *L. artaxerxes*, which I will describe in some future number. I also took several varieties of *L. alexis* having some of the spots on the under side conjoined, and two specimens of the variety *Icarinus*. *Vanessa c-album* was very rare; but *Satyrus semele*, as usual, in large numbers; and *Vanessa cardui* was just appearing when I left on September 8th. The total result falls short even of 1882; and it is to be hoped that we may have at last reached the turning-point for a series of really good seasons to follow.—MARTIN J. HARDING; Cottisbrooke, Shrewsbury, Sept. 28, 1883.

SCARCITY OF LEPIDOPTERA.—Seeing so many reports of the scarcity of Lepidoptera, I cannot help mentioning that, as far as the usual summer species of Diurni are concerned, it has not been so here; for those species usually common, such as *Vanessa io*, *V. urticæ*, and *V. atalanta*, were this year, early in September, quite as plentiful as in previous years, if not more so.—J. V. COTGROVE; Southend, Essex, October 13, 1883.

NOTES FROM YORK.—I worked hard at Sandburn during the last week in July and the first three weeks in August, and have been rewarded by taking a few good things. I succeeded in taking a very fine series of *Scoparia conspiciualis*, about two hundred varieties of *Pædisca solandriana*, about twenty rich dark brown varieties of *Ypsipetes clutata*, and a specimen of *Mixodia rubiginosana*. I also took two *Aplecta occulta*, a good series of *Noctua neglecta*, about fifty *Orthosia suspecta*, two or three *Acidalia inornata*, and a few *Phorodesma bajularia*, *Geometra papilionaria*, and *Agrotis valligera*. I also obtained a long series of *Cidaria immanata*, one or two forms of which are the best I have seen, looking like that form of *C. suffumata* which has a black central band. Also a fine series of *Thera firmata*, *Epione vespertaria*, and *Lithosia mesomella*; a few of the second brood of *Acidalia inornata*, three *Tortrix cinnamomeana*, *P. occultana*, *Crambus inquinatellus*, and *Noctua glaucosa*.—W. PREST; 13, Holgate Road, York, September 20, 1883.

LEPIDOPTERA NEAR MELROSE.—During a residence at Melrose, in August and September, I found the Lepidoptera in that district very plentiful, especially among the Micros, the Eildon Hills also having yielded a fair average of mountain species. The weather was all that could be desired, which is unusual for Scotland as far as my experience goes. Cold bitter east winds, which we often have in July and even August, rather interfere with collecting insects, either on wing or at sugar. Notwithstanding this, I feel sure it would well repay some of our southern entomologists to make a visit to the Border counties; and they seem to me to be very little worked, by the tremendous surprise exhibited by the natives when they meet you with a net. Their imagination does not appear to carry them so far as to suppose you could catch anything with it except fish, which abound in the neighbourhood. Among the Diurni I may mention *Erebia medea*, which have been very plentiful and in good condition. *Vanessa urticæ*, as usual, was in abundance, even on the Eildon Hills at a height of 1385 feet above the sea-level. *V. cardui*, *Chrysophanus phlæas*, and *Cænonympha pamphilus* have been common. I also observed one slightly worn specimen of *Vanessa polychloros*, which is very uncommon in Scotland. The Geometræ have been well represented. *Cidaria russata*, *C. miata*, *C. immanata*, *C. suffumata*, *C. fulvata*, and *Larentia pectinitaria* were very abundant, more especially in

fir woods, from which I also took one fine specimen of *Melanthia rubiginata*. *Larentia cæsiata*, *Cidaria testata*, *C. pyraliata*, *Ypsipetes impluviata*, and *Y. elutata* were common among the heather on the hills, but were generally in a rather bad condition, from a habit they had of pushing their way in amongst the twigs whenever they were disturbed. I also took a few specimens of *Thera simulata* from patches of blaeberry (*Vaccinium myrtillus*). *Odontia dilutata*, in company with *Crocallis elinguaris*, were of frequent occurrence by threes and fours at almost every gas-lamp. *Larentia didymata* were to be found in swarms in every lane, being a perfect pest. *Camptogramma bilineata* and *Melanippe montanata* have been, as usual, very abundant. I took two specimens of *Eupithecia assimilata*, which had been attracted by the light to the dining-room window. With regard to the Noctuæ, which have not been so plentiful as the Geometræ, I observed the following: *Hydræcia nictitans*, *H. micacea*, and *Noctua xanthographa*, which were very common. *Tapinostola fulva* was of frequent occurrence in marshy woods where sedges (*Carex*) abounded. *Charæas graminis* and *Xanthia citrigo* were common on the flowers of the ragwort (*Senecio jacobææ*). *Abrostola triplasia* was to be taken on the common nettle (*Urtica dioica*). *Xylophasia polyodon*, *Cosmia trapezina*, *Mamestra brassicæ*, and *Polia chi*, chiefly at rest on stone walls, which they so closely resemble in colour. *Triphæna pronuba* and *Plusia iota*, with the ubiquitous *P. gamma*, have been very plentiful in this as in several localities in the South of Scotland. I likewise obtained specimens of *Anchocelis litura*. Sugar seemed to have had very little attraction this season. Among the Deltoides, *Hypena proboscidalis* and *H. rostralis* have been very plentiful; and *Aglossa pinguinalis*, *A. cuprealis*, *Botys verticalis*, *B. fuscalis*, *Pionea forficalis*, *Eudorea pyralella*, *E. ambigualis*, and *Simaethis fabriciana*, also among the Pyralites. I also took three specimens of *Choreutis vibrana* from the flowers of the ragwort; I observed several more, which unfortunately I was unable to take. *Crambus pratellus* and *C. hortuellus* were very numerous. The Tortrices have appeared in profusion, the commoner species being even abundant. *Tortrix viridana*, *T. corylana*, and *Ditula angustiorana* were decidedly plentiful; *Dictyoptyryx contaminana* generally common on hawthorn, and *Teras caudana* was to be found in marshy places where salallows grew. *Peronea variegana* extremely abundant on fruit-trees, the larvæ doing a considerable

amount of damage to the foliage. *P. ferrugana* has been very plentiful; and I have taken a few specimens of *P. caledoniana*, which is not uncommon in Scotland. *Ephippiphora argyrana* and *Pæcilochroma corticana* were to be taken freely by beating oak and hawthorn. Among many other species I may merely mention *Dapsilia rutilana*, of which I took a few specimens from off the heather. *Cerostoma costella* on oaks, and *C. xylostella* on honeysuckle, have been very plentiful among the Tineinæ. With *Depressaria alstræmeriana*, *Endrosis fenestrella*, *Argyresthea retinella*, *A. brockeella*, *Laverna atra*, *Lithocolletis roboris*, and *L. tenella*, I will close the list of Tineinæ. From the ragwort I took four specimens of *Pterophorus lithodactylus*. It was a pretty sight to see this species, together with the bright little *Choreutes vibrana*, whose colour contrasted so pleasantly with the yellow flowers, flitting restlessly from flower to flower in the bright sunshine. Larvæ in general have been plentiful, but unfortunately were nearly always stung by ichneumons, more especially among those of the Geometræ. The ichneumons have been rather too plentiful, but seemed to be kept in check to a large extent by the much-despised wasps, which have appeared throughout the whole summer in profusion. These wasps preyed largely on the ichneumons, evidently considering them a special relish. I noticed they seized them with their fore legs, and always bit off their heads and wings before eating them, beginning at the thorax and ending with the abdomen. The larvæ of *Bombyx rubi* and *Saturnia carpinii* were very abundant among the heather. *Noto-donta camelina* common on birch trees, and *Arctia villica* and *A. fuliginosa* common on almost every wayside herb. I think, judging by my own results, that the Lepidoptera this season, with perhaps the exception of the Noctuæ, have not fallen below the average in number in the districts visited. — WILFRED W. O. BEVERIDGE; 8, Eildon Street, Edinburgh, October, 1883.

LEPIDOPTERA IN SLIGO.—It may perhaps be worth recording that I have taken two specimens of *Emmelesia unifasciata* here this year. They were in fair condition, and I took them at light. I do not know the geographical range of the species, but it is new to me here. Common things on the sand-hills, such as *Agrotis præcox*, *A. cursoria*, *A. tritici*, and *A. aquilina*, have been abundant. *A. obelisca* has been in less abundance than usual. I have seen a few *E. tæniata*; and *Plusia bractea*, although never numerous,

has been more plentiful than during last year.—PERCY H. RUSS ; Culleenamore, August 30, 1883.

CAPTURES AT BEWDLEY. — I had the pleasure of a trip to Bewdley Forest this summer, in company with Mr. Harris, of Burton, and had a most enjoyable day. The place is a most charming one, and must produce many rarities, as it is very varied and of immense extent. We were there in the second week in June, and were favoured with an exceedingly hot day. Many of the ordinary Macros were well represented, but there were none of any special note came in our way. *Lobesia reliquana* was abundant, and odd specimens occurred of *Phoxopteryx biarcuana*, *P. diminutana*, and *P. mitterbacheriana*. *Gelechia aleella* and *G. luculella* were abundant on the oak-trunks; *Lithocolletis roboricolella* seemed everywhere, but rather worn; and I took two examples of *Bucculatrix ulmella*. In one place the larvæ of *Pterophorus spilodactylus* had done their duty as larvæ should. The plants were mere skeletons; I never saw anything more neatly reduced to skeletons than they were. The larvæ had almost all left the plants; there were only six left. We returned at night with fairly well-filled boxes, and quite satisfied with our outing.—J. SANG; Burton-on-Trent, October, 1883.

ABNORMITIES IN BUTTERFLIES.—Last year I bred a specimen of *Limenitis sibylla* in which the right hind wing was entirely absent. In a recent number of the 'Field' Mr. Layard, of the British Consulate, Noumed, refers to a somewhat similar case in a species of moth, attributing the abnormality to injury received in the larval stage, his caterpillar having been accidentally pinched in the fore legs. In my case I had no means of judging, as the insect had been found with others in the pupa state. However, I have frequently met with instances of larvæ slightly attacked by ichneumons (where their terrible enemy, a *Microgaster*, had only succeeded in depositing but very few eggs), and having barely sufficient strength to make the final change, emerging with one or more of the wings curiously deformed or dwarfed, as the following cases show. I have this season bred a *Melitæa artemis* having the corresponding wing to the *L. sibylla* absent; one with the wings on the right side very much dwarfed; another in which one fore wing has quite lost its normal outline; and several specimens of *M. cinxia* and *Vanessa urticæ* similarly deformed.

These abnormalities differ materially from the dwarfed imagines that are produced by starving the larvæ. Although Mr. Layard's specimen was suffering from a very different cause to that which I have described, still my evidence will, I think, go a good way to confirm his theory that the perfection of the imago depends in a great measure upon the condition of the insect's health in the larval stage. I hope that the above remarks may elicit the experience of others upon this most interesting subject.—MARTIN J. HARDING; Cottisbrooke, Shrewsbury, Oct. 6, 1883.

COLIAS EDUSA AT EASTBOURNE. — I was pleased to see two notices of *Colias edusa* in the October 'Entomologist,' and should like to record a third. On my way from the High Woods, Bexhill, September 19th, a fine male *Colias edusa* flew over the hedge just in front of me, and preceded me for quite a hundred yards. It continually settled, but having no net I was unable to capture it.—R. M. SOTHEY; Rozel, Eastbourne.

COLIAS EDUSA.—Seeing this insect noticed in the October number of the 'Entomologist,' I think it may interest some of your readers to learn that I observed it in some plenty in the middle of September last, flying in its usual haunts over lucerne and stubble fields, some few miles from Stratford-upon-Avon, though all the specimens I netted were rather worn; a week earlier I also saw several individuals in very fine condition in the Isle of Wight. Previously to this I had not seen a single specimen of the insect since the great season of 1877, although I have visited the Stratford locality several times about the same time of year since then; in 1877 it was very common in the fields where I saw it this year. I also noticed this autumn, in the Stratford neighbourhood, immense numbers of *Plusia gamma*, and an unusual profusion of *Vanessa cardui*; in 1877 these two insects accompanied *C. edusa* in its abnormal appearance; so may not the respective appearances, and in unusual quantities, of these three species have some common cause to produce them? Referring to Mr. J. H. Jenner's notes on *Abraxas ulmata*, I may mention that the insect occurs in great profusion in several localities in Cheshire, though where met with its range of distribution is very limited, often being almost confined to a single coppice.—W. GARDNER; C. 18, Exchange, Liverpool.

COLIAS EDUSA AT SOUTHAMPTON; LACE-WINGS.—On the 14th of September last a single specimen of *C. edusa* was seen flying over a field near Southampton by a friend of mine. This is the only instance within my knowledge of its occurrence here since 1877; but in 1880 I saw two specimens at Sandown, Isle of Wight. In reply to Mr. McRae (Entom. xvi. 235), I can testify to the unusual abundance of lace-wings (*Hemerobius*) this year. A lime-tree round which I was mothing one evening last July was almost alive with countless numbers of them; but unfortunately their odour did not match their beauty.—H. E. U. BULL; The Elms, Foundry Lane, Southampton, October 2, 1883.

COLIAS EDUSA IN HAMPSHIRE.—Having noticed the records of the appearance of *Colias edusa* in Nottingham and Gloucestershire this season, I may mention that in this locality during September I counted twenty-three specimens at various times, six of which I succeeded in capturing. In no season since 1877 have I seen more than one or two specimens. If the septennial theory of the abnormal occurrence of this lepidopteron is to hold good, we may look forward to the spring and autumn of 1884 with some degree of confidence of being able not only to renew our sets of the normal type, but also of enriching our collections with some of the prized and interesting varieties of the female *helice*.—W. McRAE; Bedford House, Bournemouth, October 15, 1883.

COLIAS EDUSA.—Again I have seen but a single specimen of this butterfly; this a male, first noticed in a lucern-field on Sept. 17th, where I have seen it almost every day since until Sept. 29th, when I met with it late in the afternoon, after a heavy storm, under the hedge, looking very feeble and worn; it could but just manage to flutter about.—EDWARD A. FITCH; Maldon, Essex.

COLIAS HELICE.—While my brother, Arthur Brabon, was engaged taking *Vanessa cardui* on Monday, September 17th, on some waste ground off the Lea Bridge Road, he was fortunate in taking a specimen of this pale variety of *C. edusa*. It would be interesting to know if other specimens have occurred so near London.—G. F. BRABON; 48, Shakspeare Rd., South Hornsey, N.

ACHERONTIA ATROPOS NEAR SOUTHAMPTON.—I am glad to be able to record a capture of this interesting moth near Southampton. It was found on the bed-room door of a house at Woolston, and is now in the collection of a friend of mine.—

H. E. U. BULL; The Elms, Foundry Lane, near Southampton, Oct. 15, 1883.

CHÆROCAMPA CELERIO IN ESSEX. — Mr. Murray exhibited a specimen of *C. celerio* at the East London Entomological Society, which was captured by a workman at Messrs. Howard & Sons, City Mills, Stratford, on September 28th. — D. PRATT; Hon. Secretary, East London Entomological Society, 333, Mile End Road, London, E.

LASIOCAMPA ILICIFOLIA, &c., FROM CANNOCK CHASE. — The following notes on the Lepidoptera to be obtained around Rugeley and Cannock Chase may be of interest:—The greatest rarity to be obtained in the district is *Lasiocampa ilicifolia*, and I have not read of one being taken for the last half-dozen years. I had the good luck to find three larvæ in 1879, and found two last year, but they seem to be very delicate, for I only succeeded in rearing one imago. I have no doubt, if the district were properly worked, many more might be obtained, but they are very difficult to find, as they repose in the daytime on twigs of the heather, preferring dead or old twigs. I suppose they feed at night; I have never found any feeding or even resting on their food-plant, the bilberry (*Vaccinium myrtillus*). If any one would give me a few hints on finding and rearing them I should be much obliged. I know Mr. Weaver and other entomologists many years ago obtained large quantities of the larvæ from the locality, and I hope next year I shall be able to discover the haunts of this rare insect. The rest of the lepidopterous fauna of this region do not call for much comment. The best I have taken are *Thecla betulæ*, *T. rubi*, and *Argynnis aglaia*. The only hawk-moth I have is *Chærocampa porcellus*. Among the Bombyces, *Hepialus lupulinus*, *Notodonta camelina*, *Cilix spinula*, *Bombyx rubi*, *Saturnia carпинi*, *Lasiocampa quercifolia*, *Arctia fuliginosa* are the best. The Noctuæ are numerous, but no great rarities have come to hand, the best being *Plusia festuæ*, *Abrostola triplasia*, *Miana fasciuncula*, *Polia chi*, *Hadena thalissima*, *Agriopsis aprilina*. This year I have taken absolutely nothing. I sugared for a whole week on the skirts of outlying woods, and the result was three *Mania maura* and any number of *Xylophasia polyodon*. There have been great numbers of *Leucania pallens*, and later, *Plusia gamma*, but besides these the year 1883 proved a blank.—R. FREER; Caius College, Cambridge, Oct. 22, 1883.

VARIETY OF THE LARVA OF SATURNIA CARPINI.—Among some larvæ of this species, taken by me on some moors near here during this month, is one in which the normal green colour is replaced by glossy black, there being a band of dull green between each segment. The tubercles, instead of being pink, are bright lemon-yellow. I was not aware that this larva is subject to variation, and shall be glad to hear from any of your readers whether any varieties have come under their notice. I may add that it was not until the last change of skin that the larva in question showed any signs of variation.—G. SHUTE, jun.; Fairfield Road, Chesterfield, August 13, 1883.

THE DISTRIBUTION OF ABRAXAS ULMATA.—With reference to a note (Entom. xvi. 236) on the extent of the distribution of this insect, I may say that I have taken it in two localities in North Lancashire, viz., near Preston, and in this neighbourhood. I also captured a single specimen at sugar near Longleat, on the borders of Somerset.—H. T. HUTCHINSON; Whalley, Oct., 1883.

SYNIA MUSCULOSA AT BRIGHTON.—I have been fortunate in capturing a specimen of *Synia musculosa* here on clover-heads, flying in the daytime; also a beautiful variety of the female of *Lycæna corydon* with blue under wings.—W. E. PARSONS; 57, Cavendish Street, Brighton, October, 1883.

DESCRIPTION OF THE LARVA OF CELÆNA HAWORTHII AND OF NONAGRIA FULVA.—During the month of July my brother and I took a number of larvæ of *Celæna haworthii* and *Nonagria fulva*, feeding in the roots and stems of the cotton-grass. As there does not seem to be an adequate description of the larva of either species, I append one taken from my notes. *Celæna haworthii*.—The head is of a pale brown colour, and is slightly smaller than the 2nd segment. The body is soft and thick, and covered with minute hairs; it is of a dirty whitish colour, with several small dark spots on each segment; there is a brown corneous plate on the 2nd and 13th segments, and an irregular blotch of brown on the lateral aspect of the 3rd and of the 4th segment. *Nonagria fulva*.—The head is very small, and is of a pale brown colour. The body is about an inch in length, and is stout, smooth and very firm, cylindrical in form, and attenuated at both extremities. The skin, which is very tightly stretched, is semitransparent. The ground colour of the body is pale whitish green. On the

dorsal aspect of each segment there is a large brownish pink blotch, through the centre of which there runs a fine line of a pale yellow colour. There is a very slender, dark, spiracular line, or rather series of dots. — W. HOWARD CAMPBELL ; Ballynagard House, Londonderry, September, 1883.

CURIOUS SITE FOR OVIPOSITION BY *TRIPHLENA PRONUBA*.—In July last I observed a female of the above named at rest on a string supporting some nasturtiums. It stayed there the whole evening, despising the attraction of "sugar," which was spread close to it. In the morning the moth was gone, but my attention was attracted by an apparent thickening of the string with a white excrescence, which upon closer examination proved to be eggs. Some fortnight after I found another batch deposited in a similar position. The eggs are of a pearly white colour, and it seems somewhat curious that the string should be selected in preference to the vegetation in the immediate vicinity.—C. S. BIGGS ; 3, Stanley Terrace, West Ham Park, E.

ARGYRESTHIA GLAUCINELLA NEAR LEICESTER.—I took a journey this summer to Leicester, in the hope of again taking this rare species, which I met with there in fair quantity some years ago. I found them very scarce, and was correspondingly disappointed. The only other captures of interest were *Xysmatodoma melanella* and *Bucculatrix ulmella*, singly. When there before I took over a hundred *Argyresthia glaucinella*, and might have taken any quantity. *X. melanella* was not very uncommon, and *Tinea fulvimitrella* and *T. semifulvella* well represented, both of which were absent on this last occasion.—J. SANG ; 181, Horninglow Street, Burton-on-Trent.

SINGULAR ABERRATION OF *GRACILARIA SYRINGELLA*.—While beating a birch tree in a wood this summer my attention was drawn to a small dark moth flying about the hyacinth flowers. I netted it, and on sight of it in the net and then in the box I was quite sure I had met with *G. populella*, and that I had disturbed it from the bush I was beating. I was very much surprised, when I had chloroformed it and turned it out, to find that it was not that insect, but a dark, almost unicolorous, grey variety of *syringella*. Further search at the time produced no more, and I failed afterwards either to capture or breed it. In this example the usual whitish ground colour is replaced by a leaden grey, the

brown markings showing faintly upon the ground colour. — J. SANG; Burton-on-Trent, October, 1883.

ELACHISTA (? n. s.), &c. — I had the good fortune to capture, one evening in June last, in some marsh ground (since unfortunately tabooed), a pair of a white *Elachista*, with rather large black spot, identical with a specimen which I bred when at Darlington. I submitted it to Mr. Stainton and Professor Zeller, by both of whom it was returned as unknown to them. The manner of flight was so exactly like that of *Opostega crepusculella* that, until I had the insect in the net, I thought it was that species. The evening turned chilly, and there were no more to be had. In another locality I turned up *Elachista paludum*; they were unfortunately seriously ichneumonised, only one in ten emerging. Also, in the same place, very young larvæ of *Elachista monticola*, both new to this neighbourhood. I missed the latter afterwards by not going again for them till after they had left the plants. I never was able to find the pupæ of either species *in situ*; they must wander away from their food-plants. — J. SANG; 181, Horn-inglow Street, Burton-on-Trent.

EXTRAORDINARY NUMBER OF APANTELES GLOMERATUS INFESTING PIERIS BRASSICÆ. — In walking through a garden on the 14th inst., I observed a large caterpillar of *Pieris brassicæ*. Knowing a friend wanted some extra fine specimens of this butterfly for his collection, I thought I had a prize for him, so brought it home and made him a present of it. In a few days an extraordinary number of larvæ of *Apanteles glomeratus* escaped from it, and spun up. Disgusted at finding the poor wretch, three days afterwards, was still alive, my friend returned it to me. Not having seen such a number of cocoons from a single specimen I counted them, and found they amounted to one hundred and forty-two. — G. C. BIGNELL; Stonehouse, Plymouth, September 28, 1883.

PECULIAR MISTAKE OF DYTISCUS MARGINALIS. — I have frequently noticed in the early morning, and especially after moonlight nights, the above-named large aquatic beetle on the roof of my greenhouse. There being no water of any size in the immediate vicinity, it has often puzzled me to account for their being there, and it has just occurred to me that the beetle, in its flight in quest of fresh fields and pastures new, may mistake my

greenhouse for a sheet of water. I should be pleased to know if others have had a similar experience, as it tends to show that the insect is guided more by the sense of sight than by smell.—G. L. McDONALD ; Saffron Walden.

CRYPTORRHYNCHUS LAPATHI.—In June, 1882, I observed in one of my rambles a sallow bush that was attacked by some internal feeders, which on examination proved to be the larvæ of a beetle. I broke a piece off the bush, and brought it home for a friend, who some time afterwards informed me that they had changed to a beetle that neither of us knew at the time, but have since made out to be *C. lapathi*. Being asked to get him some more of them, I went again to the place on September 12th and found the perfect insects were in the burrows made by the larvæ, and not at all inclined to move from them; by which I concluded they must pass the winter in that way, which afterwards proved correct. Not being much interested in beetles at that time, I took no further notice of them, but happening to pass the place in the beginning of April this year, I bethought me of the beetles and went to look at them, and found them in the same state I had left them in last September: they had not moved in the least. I broke off a piece about a foot in length and an inch in diameter, which I split up when I got home, and got over twenty beetles out of it. When getting them out I noticed they gave a little squeak, which was repeated when held between the finger and thumb, and also when I dropped them into hot water to kill them; they were all of the pink colour mentioned by Mr. Bignell (*Entom.* xvi. 214). I intended to have kept a watch on the bush to have further observed the habits of this species, but some of the pic-nic parties very shortly afterwards broke the bush off—as it was quite dead—and burnt it, so that it put an end to my observations. I have no doubt the bush must have contained some hundreds of individuals, as it was infested from the ground to branches no thicker than your finger.—JOHN HILL ; Whittaker Lane, Little Eaton, Derby, September 12, 1883.

DOUBLEDAY COLLECTION AT BETHNAL GREEN.—I have pleasure in informing your readers that the Doubleday Collection keeps up its interest among entomologists, and that it is visited by large numbers for the purposes of reference and examination.—F. COLES ; Bethnal Green Museum, October, 1883.

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NOTES AND OBSERVATIONS ON THE PAST SEASON.

BY RICHARD SOUTH.

IN the localities I have visited during the past season I found Macro-Lepidoptera decidedly scarce, except in one or two notable instances, to which more particular reference will presently be made; on the other hand, many species of Micro-Lepidoptera were especially numerous. In this respect my experience would seem to coincide with that of other collectors.

As to the causes at work which influence the propagation of some species of insects and the suppression of others, I have but little to say beyond intimating my conviction that electrical and other meteorological conditions have a potent effect upon insect-life generally.

It would perhaps be difficult to point out what meteorological conditions would be considered favourable, but as we certainly observe a decided diminution of tree and plant foliage-feeding species of Lepidoptera after abnormally severe weather (as, for instance, in the spring of 1882), it would seem not altogether unreasonable to suppose that meteorological influences having a beneficial effect on vegetation would also be favourable to foliage-feeding insects. Such an hypothesis is, however, hardly tenable in face of the contrary experience of many of us during the past season. Electrical disturbances have been frequent and often of an exceptionally violent character this year, both at home and abroad. May not those electrical storms have had much to do with the paucity of Lepidoptera in some districts this year?

It has occurred to me that if the entomologist, more especially the lepidopterist, would take up the study of meteorology, and carefully compare the results of his research in both branches of

science, he would possibly throw considerable light on this matter, and enable us to arrive at some more definite knowledge of the natural laws which govern insect-life than we appear to possess at present. Before leaving this subject I may refer to an occurrence with which most collectors are doubtless acquainted, *viz.*, the great activity displayed by insects when a thunderstorm is impending; and again, how often it happens, after a heavy thunderstorm, that insects become suddenly scarce.

Having thus briefly given expression to my views concerning the scarcity of Lepidoptera, I will proceed to jot down a few notes of my entomological captures and observations during the past season. Towards the end of April and during May I found larvæ exceedingly abundant in every hedgerow about Kingsbury, Harrow, and Mill Hill, in Middlesex. These were chiefly *Nola cucullatella*, *Hybernia rupicaprararia*, some common *Micros*, such as *Teras contaminana* and *Sciaphila nubilana*, with a sprinkling of *Dictyopteryx holmiana*, *Penthina ochroleucana*, and *Sideria achatana*. On herbage growing in ditches, on banks, or waste places, a goodly number of *Chelonia caja* larvæ were to be obtained. I collected a number of these and fed them up on coltsfoot and lettuce, putting some under various coloured glass, others in complete darkness, and in fact employing all the artifice I thought likely to assist in causing some variation in the future imagines, but I need hardly say that I was not successful in obtaining a single aberrant form of *C. caja* from these larvæ. On the other hand, from some pupæ sent me from Scotland, which had been fed up in the open, I got one example which differed from the type in having the basal half of the left-superior wing of the usual cream-colour, but with the chocolate markings only indicated on the inner margin at the base and towards the costa. This specimen is deformed; one or two of the other specimens are very dark, the chocolate pigment predominating to a considerable extent.

Imagines of *Coccyx splendidulana* were abundant near Hendon, and, as the circumstances attending the capture of this species were new to me, I venture to give an account in detail. I should state, in the first place, that in previous years I had only met with single examples of this species, either at rest on the trunks or beaten from the boughs of oak trees; but at Hendon this year the insect must have been in hundreds among

the branches of the oak trees about which I at first netted and afterwards jarred or beat it. Between three or four o'clock on a fine, and at intervals sunny, afternoon, favoured by a gentle south-west breeze, I was walking by the side of a thick hedge bordering a large grass field; in the hedgerow were three oaks of moderate size, situate some thirty yards or more apart. As I was passing along, tapping the hedge as I went and netting any insect disturbed therefrom, I presently found that I had two examples of *C. splendidulana* in my net, captured at one sweep; having boxed the pair, I noticed that I was just under the larger of the three oak trees referred to. Looking up, I observed a number of the *Coccyx* dancing around and about the extremities of the branches. At this moment the sun was shining, and continued unobscured for some fifteen minutes, during which time I captured about thirty specimens; the bulk of the insects were, however, flying high up, and quite out of reach; presently clouds passed over the sun, and the gambols of the Tortrices ceased. The wind, too, at this moment had somewhat increased in force, and I thought it would be useless to beat for more specimens, as I quite expected the wind would carry away any that might be dislodged from the tree; at the same time I gave the tree a kick with my foot; this operation, however, seemed at the time somewhat futile, as far as the particular object in view was concerned, albeit the effect on my toes was one not to be lightly incurred again. On turning round with my back to the hedge, and consequently to the wind (for one always works on the lee side of a hedge), I was pleased to see *C. splendidulana* beating up against the wind, and making strenuous efforts to regain a resting-place in the friendly branches of the oak. Keeping the net at work among the evicted as long as I could see one within reach, I found that I had made no less than seven prisoners in that engagement. Owing to the sturdy nature of the oak trunk I was inclined to think that some other cause was at work in the dislodgement of the insect, but, after watching some time and not seeing any more moths on the wing, I essayed another jar—this time it was with a heavy hedge-stake; in response thereto the very much shocked refugees tumbled out in numbers, were carried by the wind some little distance from the hedge, and then fell among the grass. From their hiding-places, however, they presently arose and flew back towards the

tree, when, as before, all that came within reach were captured, and, at the end of this second *mêlée*, I had eleven in my net. After continuing this little amusement for some thirty or forty minutes I found I had filled all my boxes, and in one or two of them was a beautiful aberrant form of *Coccyx splendidulana*. I should mention that this species remains quietly in the net, and allows itself to be boxed without fuss, unless the sun is shining, under which influence it is rather lively. It did not occur on either of the other two oak trees.

At Mill Hill, in May, *Procris statices* swarmed in a field near the Midland Railway Station; a number of stunted plants of *Lychnis flos-cuculi* grew in this field, and the *Procris* showed a predilection for the blossoms of these plants. *Dicrorampha sequana* and *D. plumbagana* were very abundant on a railway-bank also near the Mill Hill Station.

In July, at Kingsbury, I observed *Semasia janthinana* flying in abundance over the tops of the highest hawthorn-hedges in the sunshine, about five o'clock in the afternoon; this is another species I have never met with in any numbers before. Three specimens of *Phtheochroa rugosana* were captured as they sat on the bramble-leaves in a hedge bordering a field. I could only discover two small vines of *Bryonia dioica*, so possibly this was not the head-quarters in the district of either plant or insect. On an oak-tree in the same hedge I found an example of *Eupœcilia sodaliana*, and was somewhat puzzled to account for its presence there until I met with a buckthorn (*Rhamnus catharticus*) bush on the other side of the field; I did not, however, get any more of this handsome Tortrix. *Grapholitha trimaculana* was in such abundance that it would be no exaggeration to say that some palings were simply covered with it, so numerous was this species. *Gelechia vulgella*, *G. luculella*, and *G. aleella*, together with *Ecophora lunarella*, were all rather common on old palings and fences.

At Box Hill *Setina irrorella* was plentiful, as also were *Pyrausta ostrinalis*, *Crambus pascuellus*, *C. culmellus*, *Oxyptilus parvidactylus*, *Mimæscoptilus pterodactylus*, and *Aciptilia tetradactyla*; and at Sanderstead, although *Eupithecia sobrinata* was quite as numerous as I have usually found it there, *Chrosis rutilana* did not occur nearly as freely as I have sometimes known it to do among the junipers at that place.

During the month of August, at Ventnor, in the Isle of Wight, I met with a few species in considerable numbers. Of these I may mention *Lycæna agestis*, *L. corydon*, and *L. alexis*. Of the last-named I also captured five examples of the aberrant form *icarinus*, and others intermediate between it and the type. Of *L. corydon* I got one female with all the wings beautifully suffused with blue, and three or four female specimens quite different to any that I have seen before. The wings, especially the inferior pair, are shot with blue; the black discoidal spot on fore wing is encircled with white; before the dark brown or blackish hind-marginal band is an indistinct bluish white band, interrupted by the blackish wing-rays; hind wings with blue discoidal spots. *Ænectra pilleriana* was not so plentiful at Ventnor as I found it there in 1879; possibly I was a little late, as several of those I captured were much wasted. In the Ent. Mo. Mag., vol. xix., page 135, is a description of the larva of this species by Mr. C. G. Barrett. The food-plant given by that gentleman would appear to be *Statice limonium*. The habitat of this plant is one in which I should hardly have expected to find *Æ. pilleriana*. In the Isle of Wight I have always found the insect on warm sunny banks, never in places likely to be excessively moist at any time. The fact of *Æ. pilleriana* feeding on *Statice limonium* surprises me, although I have reason to know that its larva feeds on several plants growing in such places where I take the moths referred to in the Isle of Wight; and were it not for the well-known accuracy of Mr. Barrett in identifying closely allied species of the British Tortrices, I should be inclined to doubt his assertion that *Ænectra pilleriana* was bred from larvæ found feeding on a plant which only occurs in salt-marshes or on muddy shores. Mr. Barrett, however, has had the opportunity of comparing the species he bred with types of *Æ. pilleriana* from the Continent, as also with specimens given him by Mr. Bond; so that there really seems to be no room for doubt in the matter.

Catoptria pupillana was very common among plants of *Artemisia absinthium*; I have often looked for this species among *A. maritima* in several places, but always without success. This year I got a large number of specimens by searching the old and somewhat scrubby plants of *A. absinthium*; the insect was often at rest on the foliage in the morning, but in the afternoon would

more often be found on the lower twigs or stems near the ground; they were made to discover themselves by gently passing the hand between the twigs, when the insects would scramble out of their retreat and run up among the foliage; from thence they were easily boxed. Very rarely one would take wing, but it never flew far, generally alighting on the grass within a few feet of the plant from which it had been disturbed. I have never seen this species flitting about, as do many others of the genus, although I have watched for it at all hours. *Eupacilia roscana* was one of the most abundant *Micros* met with in the island; wherever a few teasle-heads were to be seen there also would be *E. roscana* in force; and very large examples, too, were some of them, but somewhat wanting in the brilliancy of bred specimens. I must name a few other insects observed in the Isle of Wight, simply because they were common there. Among them were—*Urapteryx sambucaria*, *Acidalia bisetata*, *Aspilates citraria*, *Melanippe procellata*, *Ortholitha bipunctaria*, *Miana bicoloria*, the aberrant forms *furuncula* and *rufuncula*; *Pyrallis costalis*, *Pyrausta punicealis*, *Botys asinalis*, *Crambus tristellus*, *Peronea aspersana*, *Stigmonota composana*, *Dicrorampha politana*, *D. petiverana*; these last two species could sometimes be netted by the dozen; *Catoptria cana*, *Mimæseoptilus bipunctidactylus* and *Aciptilia baliodactylus* complete the list. Wasps were not uncommon, *Vespa vulgaris* being especially abundant among rough herbage in one or two places along the coast.

Boarmia repandaria—about forty larvæ of this species were obtained from North Devon in April; they were found feeding on bilberry (*Vaccinium myrtillus*) and heather. When they came to hand some were nearly full-fed, whilst others were less than half-grown; as I could not readily obtain either bilberry or heath, when the supply of food which came with them was exhausted I gave them plum-leaves from trees growing in my garden. In due course thirty-five imagines made their appearance, varying in coloration from a pale grey to a brownish black, and including no less than sixteen fine examples of the aberrant form *conversaria*. I need hardly say that *Boarmia repandaria* larvæ are frequently found on hawthorn, sloe, and elm; but I do not know of an instance where larvæ fed exclusively on either or all of these three kinds of pabulum produced the aberrant form above alluded to. It must not be inferred, however, that I attach any

particular importance to food as a factor in the production of such aberrations. Mr. Grigg, of Bristol, was also kind enough to send me nineteen larvæ of *Boarmia repandaria*, part of a brood from a banded female. These were about half-grown when I received them, and had been fed so far on birch. I supplied them with plum, which they took to kindly, and attained a considerable size before entering the earth for pupation. Eventually ten very large imagines of the ordinary form and nine equally large of *conversaria* emerged. The sets of each form were very uniform in tone of coloration and character of marking, in both these respects contrasting strongly with imagines from the collected larvæ from North Devonshire.

12, Abbey Gardens, St. John's Wood, London, N.W., November, 1883.

FURTHER NOTES ON THE SEASON; WITH CAPTURES IN WEST NORFOLK.

BY EDWARD A. ATMORE.

IN the September number of this Journal some remarks of mine appeared bearing on the season, with an enumeration of my principal captures up to the beginning of July; and thinking that a short summary of my further captures from that time to the present might prove interesting, to at least some of your readers, I have again ventured to pen a few lines.

Wet weather, as stated in my last contribution, set in at an early date in July, and much to my regret continued during the greater part of that all-important month for collecting; however, taking advantage of a few fine intervals, I found—certainly rather to my surprise—that not a few species were fairly represented, although they mostly showed unmistakable signs of the prolonged moisture to which they had been exposed; many of the Macrolepidoptera were so worn that I found it a difficult matter to recognise the species to which they belonged.

During my short visit of two days to the coast I encountered more wind than could be deemed desirable for such an exposed situation, and on the second day rain again fell in torrents during the afternoon and evening, so that I was unable to make the best of the two days at my disposal. The best capture I made there was undoubtedly four specimens of the much-

coveted *Anerastia farrella*; these were larger than those of previous years, but rather worn. On an adjoining salt-marsh I found *Eupæcilia vectisana* in plenty, flying (as many of the *Eupæciliæ* do) most freely in the afternoon; but was rather disappointed in my fruitless search for larvæ of *Agdistes bennetii* on the sea-lavender (*Statice limonium*), which grew there in plenty. Amongst other species met with on the coast I note *Leucania littoralis*, *Macroglossa stellatarum* (of frequent occurrence), *Crambus warringtonellus*, *C. inquinatellus*, abundant and variable, and some nice varieties of the common *C. hortuellus*; *Semasia janthinana*, *Chrosis tesserana*, *Coleophora therinella*, and a few *Gelechia pictella*, *G. instabilella*, *G. tæniolella*, *G. atriplicella*, and *G. distinctella*, with swarms of commoner *Gelechiæ*, such as *G. marmorella* and *G. desertella*; the two latter species when disturbed fell out in numbers on the sands. *Satyrus semele* was just emerging, several worn specimens of *Vanessa cardui* were seen, and *Plusia gamma* still kept up its reputation for ubiquity.

To return to inland collecting, I observe that *Lycæna ægon* was comparatively scarce on our heaths; whilst the larvæ, cocoons, and imagines of *Zygæna trifolii* were unusually abundant. Towards the end of July and beginning of August *Eupisteria heparata* was again out in fine condition, and tolerably common, among alders. Surely this species must be double-brooded! *Coremia quadrifasciata* I quite failed to get in good condition, although worn specimens occurred from time to time; some of these placed in boxes very kindly deposited eggs. *Acidalia incanaria* was common, *A. scutulata* and *A. bisetata* were frequent, and *A. inornata* and also *A. emarginata* occurred sparingly. *Lithosia griseola* flew in plenty at dusk; but only a few of the more highly-prized *L. stramineola*; *L. mesomella*, with some interesting varieties, was also met with. Of the *Pterophorina* only *Pterophorus bertrami* and *P. acanthodactylus* are worth mentioning. Among others the following were taken or observed:—*Xylophasia scolopacina*, disturbed by day in woods; *Nonagria despecta*, *Leucania phragmitidis*, and *Hepialus sylvinus*, the latter common, and remarkably fine both in size and colour; *Orthosia suspecta*, *Noctua umbrosa*, *Thyatira batis*, *Hydræcia nictitans*, *Agrotis nigricans*, and *A. tritici*, at sugar; *Epione apiciaria*, *Platypteryx falcula*, *Eupithecia coronata*, and *Rhodophaea consociella*, flying at dusk; while *Crambus latistriellus* and *C. ha-*

mellus, always plentiful in one chosen locality, were more numerous than I have ever before seen them; *C. pinetellus* and *C. geniculellus* also occurred, but in more limited numbers. *Charæas graminis*, *Pyralis glaucinalis*, and *Paraponyx stratiotalis*, were noticed at light.

Of the Tortrices, *Tortrix viburnana* was common; I note that its curious females, with their much reticulated and narrow pointed wings, are difficult to obtain, although they can be had in plenty from larvæ on *Myrica gale*. *Tortrix lafauryana* did not fail to occur in its usual numbers, and from a good supply of larvæ a fair proportion of females was secured; for like the former the female is scarcely ever seen on the wing. *T. cratægana* was tolerably common, but only found in one wood. Among others taken I note *Peronea favillaceana*, *P. schalleriana*, *P. aspersana*, *Argyrolepis badiana* (its allied species, *A. cnicana*, usually occurs annually, but I have not observed it this year), *Xanthosetia zoegana*, *Grapholita nisana*, *Ephippiphora ephippiana*, *E. bimaculana*, *Penthina betulætana*, and *E. dubitana*. *Dicrorampha politana* and *E. angustana* absolutely swarmed on our heaths.

King's Lynn, November 7, 1883.

NOTE ON A NEW FORM IN THE GENUS ZYGÆNA.

BY W. PREST.

DURING the last week in July I bred a specimen of the genus *Zygæna*, which seemed to me quite different to anything I had seen before. I went the next day to where I got the pupæ from among which it appeared, and by hard work I took six more, flying in company with *Zygæna loniceræ*. I looked several times afterwards, but could find no more like the particular form I am about to describe. When flying they have a rather washed-out appearance, and that may account for my not taking them before.

The insect under notice is not quite so robust in appearance as *Zygæna loniceræ*. The anterior wings look a little more pointed than that species; the colour of those wings is steel-blue, and they are more sparsely covered with scales than in *Z. loniceræ*; posterior wings and spots pink, *not crimson*; the border of posterior wings is brown, *not black*; and the cilia of all

wings *whitish*, instead of being black, as in *Zygæna loniceræ*, *Z. trifolii*, and others of the same genus; antennæ seem rather finer; and it is altogether a very curious-looking insect.

Many gentlemen in London have seen the specimens to which I refer, but no one would give a direct opinion as to what they are. I went to compare them with the examples of the genus in the British Museum at South Kensington, and saw, by the kindness of Mr. Kirby, all their specimens of *Zygæna*; also those in the collection of Professor Zeller. I further went to Bethnal Green Museum, and saw all in the Doubleday collection; but did not find an insect in either which is at all like my specimens.

I venture to think it is fair to presume that it is either a species new to science, or a good local form; and as such I have great pleasure in provisionally naming it *Zygæna eboracæ*, in honour of the locality which has afforded me so much pleasant entomological study, Ebor being the ancient name of York.

My opinion is that it is a good local form of *Zygæna loniceræ*, for it cannot be *Z. trifolii* nor *Z. meliloti*, because neither species occur in this district.

13, Holgate Road, York, November 12, 1883.

ENTOMOLOGICAL NOTES, CAPTURES. &c,

PRESENTATION TO MR. JOHN T. CARRINGTON.—It is seldom that entomologists have experienced such genuine pleasure as fell to the lot of those who attended the meeting at the Royal Aquarium on the evening of the 5th November last. Although the usual business of the first Monday in the month, *viz.*, the exhibition of specimens, was as interesting as usual, yet the presentation of a handsome mahogany entomological cabinet (made by Brady) to Mr. John T. Carrington formed the chief feature of the occasion. It contains fifty-four drawers, 20 in. by 18 in., arranged in three tiers; and forms a fitting present to one whose labours have added much to the cause of Entomology. The presentation was made, in the name of the numerous subscribers, by Mr. J. Jenner Weir in a happy speech; and I am sure that he expressed the sentiments of all present when he observed that the meetings there had been among some of the

most pleasant in his entomological career. "So free from any restraint, so unconscious of the presence of the host," will convey a fair idea of the tenour of his speech, and no better words could have been used. Mr. Carrington, in a few terse words, while thanking the subscribers for their present, claimed the bulk of the pleasure of the meetings for himself, such pleasure he said, with his accustomed good nature, being far more than recompense for any trouble to which he might have been put. "To see most of my old entomological friends around me is one of the greatest pleasures that can fall to my lot," was heard with satisfaction by all. It must have been felt by all present that the opportunity of meeting once a month at these réunions is a great boon, and one which entomologists cannot appreciate too highly, as it not only calls together old friends, but brings to a focus much of the work done, especially around London, during each summer. These gatherings average about thirty-five to forty, and many rarities are there exhibited which might otherwise never be seen by those who are interested; and while many local societies hold exhibitions at various times, those at the Royal Aquarium stand pre-eminent. A cursory glance at some of the exhibits on this evening will bear out this statement, although the general scarcity of the past summer was evident in the number of boxes shown being less than usual. Still, however, the well-marked specimens of *Argynnis lathonia*, taken at Dover this year; the very pale, in fact yellow, variety of *Vanessa urticæ*; the widely varied under sides of *Lycæna adonis*, exhibited by Mr. E. Sabine, were as interesting as the living larva of *Plusia bractea*, brought over specially from Ireland by Mr. Percy Russ. The specimen of *Crambus myellus* shown by Mr. Julius Jager was very good, as likewise were his dark forms of *Hydrocampa nymphæalis*, his variety *chantana* of *Peronea cristana*, and his long row of *Erastria venustula*; and the *Pterophorus acanthodactylus* bred from *Stachys sylvatica*, exhibited by Mr. Richard South, drew much attention. *Vanessa urticæ* seems to have been subject to considerable variation this year, for Mr. F. L. Burney showed some of extraordinary character; so also has *V. atalanta*, for several could be seen in various boxes, although the aberrations were not in such striking degree. That of Mr. J. A. Clark is worth mention, the crimson colour of the margin of the hind wing being considerably extended. In the same box was a dark

form of *Cidaria suffumata* of quite a northern type, taken at Chingford; and a specimen of *Acronycta leporina*, taken at Abbot's Wood, having a dark blotch of some extent on the right wing. Mr. Wm. Machin's long row of *Geometra smaragdaria* formed one of the most popular exhibits of the evening, and were well calculated to excite the feeling of envy. A series of *Nonagria elymi*, and one of the local form of *Eupithecia nanata* from the Island of Unst, appeared in Mr. Carrington's box. Some exceedingly well-set specimens of *Coremia quadrifasciaria* were shown by Mr. J. T. Williams; and the long and varied row of *Nola centonalis*, bred by Mr. Robert Adkin, were looked at more than once. The Tortrices shown by Mr. H. Payne were not without interest; and Mr. R. G. Burry, secretary of the Haggerston Entomological Society, showed a male *Fidonia pinaria* in the guise of the female. The host of specimens exhibited by Mr. T. W. Hall, among which were noticeable a yellow variety of *V. atalanta*, *Pieris crataegi* from the New Forest, a row of *Tethea subtusa*, and several *Dicranura furcula*, go far to show that there are some diligent workers in the field. Many other exhibits were remarked, although the presentation was the chief feature of the evening; and we trust that the cabinet will prove a source of pleasure to its present possessor, and frequently remind him that there are those who feel grateful for his constant endeavour to assist with equal courtesy the poor gardener who comes with his destructive larvæ for identification, or the rich collector with his unnamed specimens.—W. H. WRIGHT; Secretary's Department, Inland Revenue, November 7, 1883.

NOTES ON THE SEASON FROM CROYDON AND ELSEWHERE.—The season has been on the whole one of scarcity, at least in the first half of it, but some species have been unusually abundant. During the mild January *Cheimatobia boreata* and *C. brumata* were common at West Wickham; *Hybernina defoliaria* was not very scarce; *H. leucophæaria* was in tolerable abundance, though not so common as in former years, and one specimen of *Phigalia pilosaria* was taken. In February several of these species continued, and towards the end of the month *Hybernina progemma*, *Anisopteryx æscularia*, and *Tortricodes hyemana*, but the two former were much scarcer than usual; and *H. rupicaprararia* was not seen at all. These continued till the 4th of March, when the weather became so cold that for three weeks nothing

was seen. During February I noticed, at night, an unusual number of larvæ of a *Noctua* unknown to me; so common were they that, if I had taken the trouble of collecting them every night, I could have obtained thousands; they were brownish, with paler lateral stripes, and two rows of black dorsal spots. Although I took over a hundred, and several formed cocoons, yet I got no pupæ. I saw no *Lepidoptera*, except *Tortricodes hyemana* and one or two *Hibernia progemmaria*, till the 24th of March, when, although the weather was very cold, the sun shone brightly; I then met with one specimen of *Brephos parthenias*. In a few days the weather became warmer, and *Diurnea fagella* then appeared. I noticed this year that a very large proportion were a very dark grey or nearly black variety, and venture to suggest that it may have had something to do with the damp winter. *Brephos parthenias* appeared more commonly in April, but was much more scarce than last year and much later in appearing, it having appeared on March 10th last year. I am afraid that the former circumstance was partly caused by the persecution which it suffered in 1882, as I heard that a dealer in entomological specimens took a considerable number. I took one *Pachynemias hippocastanaria* at Shirley on April 2nd, and saw one or two on other days at the beginning of the month; and *Lobophora lobulata* appeared on the 8th. At sallows nothing appeared, except a very few *Teniocampa gothica*, *T. stabilis*, *T. instabilis*, and *T. cruda*. I took one *Cymatophora flavicornis* on April 5th, and *Tephrosia biundularia* appeared about the 12th; hibernated specimens of *Cerastis vaccinii*, one *Calocampa exoleta*, and *Eupithecia abbreviata* about the 10th; *Fidonia atomaria*, *Eupithecia nanata*, and *Pachynemias hippocastanaria* (in great abundance) about the 25th. About this time I also saw one *Anticlea badiata* and a few *Selenia illunaria*. I also took, by sweeping at night, large numbers of the larvæ of *Scodonia belgiaria*, mixed with those of *Aspilates strigillaria*. *Tephrosia crepuscularia* and *Anarta myrtilli* both appeared on April 30th, and continued on the wing for a long time after. I took *A. myrtilli* in great abundance on Shirley Hills in July. In May appeared at first only the April species, but later on appeared *Panagra petrarum*, *Adela viridella*, *Venilia maculata*, *Melanippe montanata*, *Argynnis euphrosyne*, *Thecla rubi* (one curious specimen of the latter I took with a yellowish white spot on the upper side of the fore wing),

Anthocharis cardamines, *Pyrausta punicealis*, and *P. purpuralis*. *Fidonia piniaria* appeared on the 27th, but it was not till the end of June that it was fully out, and it continued till the middle of July, and was more abundant than I have ever seen it before, especially the females; the larva was very common this autumn. During a visit to Essex, in June, I saw *A. selene* and *Melanippe hastata*. The next day, at West Wickham, a friend of mine took a specimen of *A. selene*, flying with its commoner congener, *A. euphrosyne*, and also a specimen of *Minoa euphrobiata*; this fact is interesting, as neither of these two last-mentioned species occur regularly at West Wickham. During June also appeared the following:—*Hepialus humuli* (2nd of June), *H. lupulinus*, *Lomaspilis marginata*, *Scodonia belgiaria*, *Aspilates strigillaria*, *Agrotis porphyrea*, *A. exclamationis*, and a *Noctua* which I think was *A. nigricans*, *Dianthæcia carpophaga*, *D. conspersa*, *Adela degeerella*. During July I took *Elloperia fasciaria*, *Phorodesma bajularia*, *Hemithea thymiararia*, *Hepialus hectus*, *Liparis auriflua*, *L. salicis*, *Pachynemia hippocastanaria* (second brood, I suppose), *Eupithecia minutata*. I found sugar perfectly useless this summer, the best that I took in one night being *Xylophasia polyodon* and *Apamea oculea*. About the end of this month I took a number of male *Nemotois scabiosella* and three females near Caterham in a grassy meadow. The males were very common, and I took as many as I could box. The females were not fully out, but last year, when I discovered the species in this locality, I took three females and only one male; they were then getting over. I spent a few days, at the end of June, at Reigate, and, although the weather was rather unfavourable, I took a good many things. I noticed, in collecting the cocoons of *Zygæna filipendulæ*, that a great many contained dried-up larvæ, or very small pupæ, which latter died. Can any one suggest why the larvæ should have been starved to death, as that seems to me to be the cause? I took here *Strenia clathrata*, all three species of *Pyrausta*, *Ennychia anguinalis*, *Acidalia imitaria*, saw one *A. ornata* taken, *Eupithecia coronata*, and *Phytometra ænea*. I searched the chalk hills carefully for *Spilodes palealis*, of which I took specimens in 1878, but without success. In the New Forest the scarcity of some species was very apparent; *Limenitis sibylla* and *Argynnis paphia* were scarce and getting over, especially the former; *A. adippe* and *A. aglaia* were

scarce, but fresher; the *Catocalæ* altogether absent; *Argemone* fairly common and fine; *Selidosema plumaria*, males very abundant, females only three; *Lycæna ægon*, common, but often worn; *Lithosia quadra*, only one; *Liparis monacha*, none at all; *Cleora glabraria*, three; *Vanessa polychloros*, one; *Cynthia cardui*, one; *Acidalia inornata* (?), one; *A. bisetata* and *A. aversata*, very common, the only common insects in the evenings; a *Nonagria* or *Leucania*, something like *Bondii*, one; *Eubolia palumbaria*, common; three pupæ of *Nonagria typhæ* and one of *N. fulva* from stems of *Typha latifolia* (I bred one of the *N. typhæ* and the *N. fulva*). At Box Hill, on August 1st, I took *Ilithya carnella* (fifteen), *Hesperia comma* (just coming out), only one. The day was very hot, and I saw plenty of various common things flying about; the yew trees produced one *Lithosia aureola*, and in Headley Lane I took three *Botys pandalis*. At Ventnor I found *Cynthia cardui*, common; *Vanessa atalanta*; *Lycæna argiolus*, *L. agestis*, *L. adonis*, and *L. corydon*, all common; *Botys flavalis* and *B. asinalis*; *Gnophos obscurata*; *A. citraria*, very abundant; &c. I got eggs from one *A. citraria*; the larvæ emerged after I came to Croydon; they were dull greyish brown, and always rested with their heads curled in. I did not know their food-plant, but I supplied them with various low plants; all died except one, which subsisted for about a fortnight on clover, but never grew, and died at last, as I neglected it for a few days. Returning to Croydon, I found insects very scarce at the beginning of September. The ivy is just coming out, and I hope to take something if the weather is favourable. I have taken, at sugar, *Cymatophora diluta*, *Amphipyra pyramidea*, and *Anchocelis pistacina*. A few days ago an *A. litura* flew into the room, and yesterday I took at sugar *Cerastis vaccinii*, *Phlogophora meticulosa* (very scarce this autumn), and *Xanthia ferruginea*. I have found some insects very common this year, such as *Euchelia jacobææ* and *Sesia tipuliformis*. I took a *Scotosia undulata* this year at West Wickham; as I did not know it occurred there, I was somewhat surprised.—W. M. GELDART; Addiscombe, Croydon, Oct. 14.

NOTES FROM GIBRALTAR. — I read with much interest Capt. Becher's account of his captures at Gibraltar (Entom. xvi. 241). As my experience of the "Rock" is somewhat more extended than Capt. Becher's, perhaps I may be allowed to give a more

complete list of the local Rhopalocera, and to add one or two notes. My list of captures on the Rock itself is as follows:—*Papilio machaon*, *Thais rumina*, *Euchloe belemia*, *E. ausonia*, *E. euphenoides*, *E. tagis*, *Pieris daphidice*, *P. brassicæ*, *P. rapæ*, *Colias edusa* and var. *helice*, *Gonepteryx cleopatra*, *Vanessa atalanta*, *V. cardui*, *Hipparchia fidia*, *Satyrus megæra*, *S. egeria*, *S. janira*, *S. ida*, *Lycæna argiolus*, *L. alexis*, *L. agestis*, *L. bæticus*, *Polyommatus phlæas* and var. *eleus*, *Thestor ballus*, *Thecla rubi*, *T. ilicis*, *Spilothyrus alceæ*, *S. altheæ*, and *Hesperia proto*. In addition to these, I have taken the following in the surrounding country:—*Leucophasia sinapis*, *Anthocharis cardamines*, *Gonepteryx rhamni*, *Hipparchia statilinus*, *Satyrus pasiphae*, *Cænonympha dorus*, *Lycæna melanops*, *Thecla roboris*, *T. quercus*, *Hesperia alceæ*, *H. sao*, *H. nostradamus*, *H. actæon*, and *H. lineola*. I have never seen *Pieris napi* nor *Vanessa polychloros*. The male of *Lycæna alexis* has very frequently a marginal row of small black dots on the upper side of the hind wings. Var. *eleus* has frequently a row, more or less indistinct, of purple spots between the base and the marginal copper band on the hind wings, reminding one of the white spots in *termattensis*. The under side of *L. agestis* is of a rich burnt-sienna colour, instead of the usual grayish brown. The hunting season begins about February 18th, when, if the season is fine, *T. rumina* and *E. belemia* begin to appear, followed at the end of the month by *T. rubi*; but April, May, and June are the most profitable months. Almost the last to appear is *H. fidia*, quite at the end of June. Before the middle of July all herbage is burnt to one uniform brown colour, and the chase comes to an end. Some few stragglers (notably *P. nostradamus*) linger on in the greener spots till the end of September, and of course some live through the winter. Heterocera are scarce. Sugaring was an utter failure and attended with difficulties, as the only place available for the purpose is the public garden, which at night bristles with sentries, to whom of course an entomologist fully equipped with lantern, &c., is an object of grave suspicion. The great abundance of ants, too, rendered the sugaring of the trees useless. The mixture was frequently one mass of ants when I visited the trees treated with it. *Macroglossa stellatarum* may be seen all the year round exploring the crevices of the rocks, and often the cracks in the wood-work within doors, with its proboscis. When doing so it is said locally to be looking

for bugs (*C. lectularius*); if this be the case, it must be a very well fed insect. The handsome but sluggish *Saturnia pyri* is not uncommon, and appears in April.—G. S. PARRY; Major, R.A.

LEPIDOPTERA NEAR MAIDENHEAD.—I am very pleased to be able to add to the records of the appearance of *Colias edusa*. I noticed a male of this species in the meadows between Cookham and Maidenhead on Sunday, October 28th. On the same morning, which was very bright and warm considering the lateness of the season, several specimens of *Gonepteryx rhamni*, *Vanessa atalanta*, and *V. cardui* were seen. Common Noctuæ are still coming freely to sugar in my garden, where I took, last month, amongst other things, *Xanthia gilvago* and *Xylina semibrunnea*, both species new to this district. I notice that a correspondent (Entom. xvi. 236) draws attention to the fact of *Hepialus velleda* occurring in the south. It occurs freely, sometimes in great abundance, in a copse near Pinkney's Green, in this neighbourhood; last year it was not so common, on account probably of hard weather at the time of its appearance. *V. cardui* has been abundant all over this district during the past season; I have also noticed that *Lycæna alsus*, which used to be very local, has established colonies in places where it never used to be found. *Argynnis adippe* continues to be as abundant as ever; it is one of the commonest butterflies in many of the woods on the Buckinghamshire side of the river. It is with regret, however, that I have to record the total disappearance of *Macroglossa bombyliiformis* and *M. fuciformis*, both of which used to be quite common in the Dropmore Woods; it is now some years since I have seen either, and I greatly fear that they have disappeared in the same way that *Limenitis sybilla* has done from the neighbouring woods of Burnham Beeches and Black Park. Last June I visited, for the first time, the chalk downs at Chinnor, near West Wycombe, and found *Thecla rubi* and *Procris geryon* in abundance; also a few good specimens of *N. plantaginis*. Judging from appearance, I should think the last-named locality ought to make a very fair entomological collecting-ground; it is, however, rather difficult to reach from London.—H. C. LANG; Maidenhead, Berks. Nov. 1, 1883.

VANESSA ATALANTA IN HUNTINGDONSHIRE.—*Vanessa atalanta* was very abundant this year in Huntingdonshire; it has not been

so common since 1879. On Wednesday, the 17th, dozens could be seen flying, although the wind was strong, and the gusts came and blew the insects frequently into the high hedges and some into the grass, so that I could pick them up; they were good specimens. It has been recorded that *Plusia gamma* was extremely common in September, being the second brood. I believe from observations that the later brood is always more numerous than the earlier. Possibly the summer weather is favourable for its better development of the larvæ, &c., and so larger numbers are ensured. Several species of Diptera have been more than usually abundant this autumn on the flowers, chiefly *Compositæ*, in my garden; among them were *Syrphus balteata*, *S. ribesii*, *Eristalis tenax*, *E. nemorum*, *E. similis*, and *Helophilus frutetorum*. *Tipula oleracea* has been quite a pest in some fields near here; it literally swarmed. — HERBERT S. NORRIS; St. Ives, Hunts, October 18, 1883.

ARGYNNIS LATHONIA AT DOVER.—Thinking it not improbable, after last year's "takes," that *A. lathonia* might put in an appearance here this season, I resolved to pay another visit, hoping that I might again take this little rarity; but not a trace of it was to be met with at the localities of either last or former years, although numerous collectors were from time to time on the ground, and we were favoured with some really magnificent weather. I am, however, pleased to record several captures at a spot some distance removed from last season's by Mr. Bayley, one of the collectors who was successful in 1880. Mr. Bayley informed me one day that he had seen *A. lathonia*, but, having no net with him at the time, was consequently unable to secure it. He kindly directed me where to go, but I unfortunately misunderstood him, and spent two or three more days searching in vain; and when next I saw him I heard that he had taken four, two on the 14th inst. and two on the 15th, one, a female, having large and somewhat confluent spots on the fore wings, giving the insect rather a striking appearance. When I did succeed in finding the place the weather had changed, and we were seldom favoured by the sun, whose shine had heretofore been so constant, and although I saw one *A. lathonia* I was unable to overtake or capture it. Most provokingly (for me) the sunny intervals generally occurred when I was absent some distance from the ground, and by the time of my return the sky

had again become overcast. Mr. Bayley, however, living close by, was able to take almost immediate advantage of such moments, and was rewarded by taking one on the 21st, and two (*in copulâ* on a thistle) on the 22nd, all of which he handed me alive. After my return home, Mr. Bayley wrote me that on the 28th three more, two of which were wretched dilapidated specimens, were taken by R. Gillham, and one by himself on the 29th, also much worn. These are all I have heard of as being taken at Dover this season, and I may add that I was informed by Mr. Gray that a specimen was seen last year at or near the place that has proved the present headquarters of the species.—E. SABINE; 17, The Villas, Erith, Sept., 1883.

COLIAS EDUSA IN DEVONSHIRE.—As several notices of *Colias edusa* have appeared in the 'Entomologist,' I may perhaps record the appearance of a single specimen, which I saw flying round a cliff at Dawlish, Devon, on August 28th.—W. W. FOWLER; Lincoln, November 7, 1883.

SPHINX CONVULVULI AT WALTHAMSTOW.—I had the pleasure of taking on September 19th last, after three weeks' watching, an example of the above-named insect. It was flying rapidly round a bed of Marvel of Peru.—H. JOBSON, sen.; Walthamstow.

SPHINX CONVULVULI, &c.—On the 2nd of last month I had a fine specimen of this insect brought to me, but in a very battered condition, owing to its having been taken by inexperienced hands. I have not seen this *Sphinx* since 1872, when I received several, one of which was taken at the top of a scaffold-pole. With reference to the duration of the pupal stage of *Smerinthus populi*, I may add that I bred, at the beginning of August, ten specimens from eggs deposited in May: the larvæ underwent pupation at the beginning of July. Having lately returned from Belgium, I may mention that during September insects were very scarce there; the only Lepidoptera I noticed worth mentioning were ten specimens of *Colias edusa*. Larvæ were also far from common, with the exception of one species, which swarmed on the sand-hills at Scheveningen (Holland), and strongly resembled *Eriogaster lanestris*. I therefore conclude that the dearth of insects during the past season has not been confined to this country alone.—ALFRED T. MITCHELL; 5, Clayton Terrace, Gunnersbury.

DEILEPHILA LIVORNICA IN SUSSEX.—Having seen that several captures of the above-named insect have been recorded in the 'Entomologist' during the last two months, I think it may interest the readers of that magazine to know that I took a very fine specimen on June 29th last, sitting on a truss of straw in a field.—W. H. BLABER; Beckworth, Lindfield, Sussex, Oct. 31st.

THE DISTRIBUTION OF ABRAXAS ULMATA.—This species is by no means rare in Cheshire, but is very local: here it is found on the borders of Dunham Park, and in various places on the banks of the Bollin. In Derbyshire, however, it is exceedingly abundant in Lathliell-dale and Cressbrook-dale. I have seen it by hundreds on the grass in the daytime in Lathliell-dale; the specimens are usually of a pretty light form. In Cressbrook-dale they are generally dark, some being very beautiful varieties. You may quietly walk among them and select what you like as they rest on the grass.—JOSEPH SIDEBOTHAM; Bowdon, Nov. 6, 1883.

ENNOMOS AUTUMNARIA AT DOVER.—Possibly after the extensive breeding of this species by Messrs. Tugwell and Harbour, it is hardly worth while to chronicle captures. I may, however, just state that Mr. Davis, of Dover, has taken several specimens there this season, and hopes to breed the insect next year, having a goodly number of eggs, deposited by two females.—E. SABINE; 17, The Villas, Erith, September, 1883.

ABUNDANCE OF HEMEROBIUS, AND GENERAL NOTES. — At the suggestion of Mr. McRae (Entom. xvi. 235) I write to say that I have noticed a very large number of the above-mentioned insects in this neighbourhood during the present year, and also that rose-trees have been much freer from Aphides than usual. With regard to Lepidoptera, the season has, in my experience, been again characterised by a remarkable scarcity of nearly all the usual species, with a few exceptions, notably that of *Vanessa cardui*, which I saw in large numbers on the South Devon coast during August, and *Argynnis paphia* and *Arge galathea* were also plentiful in the same locality; but, besides these three species, I observed very few insects in any number. On August 6th, during a few hours' collecting round Kemsing, near Sevenoaks, very few Lepidoptera were on the wing, such Diurni as *Lycæna corydon* and *Arge galathea*, which usually swarm in that locality, being very

sparsely represented; the only insect I saw during the day which was worth taking was a fine specimen of *Eremobia ochroleuca*, which I found in the chalk-pit. In the neighbourhood of Bromley sugar has been as fruitless as it was last year; and Geometræ have not been nearly so abundant as usual, the only exception being *Phorodesma bajularia*, of which I took a considerable number. Among the Noctuæ, *Brephos parthenias* was abundant at the end of March and beginning of April, but this, with the exception of the ubiquitous *Noctua xanthographa* and *Plusia gamma*, was the only representative of that large family which I saw in any abundance. Of *Triphæna pronuba* I do not think I saw half a dozen specimens throughout the season, and of *T. orbona* I do not recollect one. While sugaring at West Wickham one evening in July, I observed *Hepialus hectus* flying over the tops of the grass in large numbers, and a few Geometræ were on the wing; but the solitary visitor to the sweets was one specimen of *Rusina tenebrosa*, and near this town I have diligently worked a good round of trees with very little better success. On the whole I have found the season considerably worse than the last in every respect; many species which I took then appeared in considerably diminished numbers this year, and many have not put in an appearance at all.—P. WATCHURST; Hope Park, Bromley, Kent, October 1, 1883.

DIPTEROUS MINER IN THE LEAF OF THE GROUND IVY.—Early in September I gathered a few leaves of the ground ivy (*Glechoma*) that gave evidence of the work of some dipterous miners. They were put into a glass-topped box, and occasionally sprinkled with water to keep them moist. The larvæ must have been nearly full-fed, for in a few days I found half a dozen pupæ in their brown cases adhering to the bottom of the box. The tenant of one of these put on wings on September 27th, and has proved to be the *Phytomyza glechomæ* of Kaltenbach, possibly new to Britain. Kaltenbach says of it:—"The larva lives in two generations,—from May to June, and from August to September. The galleries which it forms extend at first along the edge of the leaf, widening materially as the grub attains maturity." The tunnel, indeed, which is pale and conspicuous, slightly reminds you of a wreath of steam. Kaltenbach says, in relation to the imago:—"Fly dull black, poisers whitish, legs uniformly black; the ordinary cross-vein does not exactly coincide with the smaller

one, but lies somewhat further removed from the base of the wing. In other respects the fly resembles Macquart's *Phytomyza nigricans*." I have only reared one; the others, doubtless, will remain in pupahood till May of next year.—PETER INCHBALD; Fulwith Grange, Harrogate, November 10, 1883.

WATER-BEETLES GUIDED TO WATER BY SIGHT, AND NOT BY OTHER SENSES.—It is a well-known fact that the water-beetles are often found on greenhouses and hotbed-frames, which they evidently mistake for water. I have never taken *Dytiscus marginalis* in this way, as Mr. McDonald has done (Entom. xvi. 263); but I have found small *Hydropori* on my frames. The habit is noted by Professor Westwood in his 'Introduction to the Modern Classification of Insects' (1840), where he says (vol. i., p. 103):—" *Acilus sulcatus* is another species which possesses the power of making a noise. Frisch states that this is produced under water; but a specimen of the insect which I kept some time (and which I had caught on the ground, having fallen whilst flying upon some glass-panes, which it had evidently mistaken for water) was equally noisy when confined in a box in the sunshine."—W. W. FOWLER; Lincoln, November 7, 1883.

WATER-BEETLES AND LIGHT REFLECTED BY GLASS.—I have also, like your correspondent Mr. McDonald (Entom. xvi. 263), noticed that water-beetles are often misled by glass, as I have found on my frames the large beetles *Hydrophilus piceus*, as well as smaller ones, evidently denizens of the water by their shape; indeed I have heard them knock against the glass on fine nights, probably travelling between the ponds with which this part abounds. This travelling habit of water-beetles may perhaps afford some elucidation to the question so often asked as to how new ponds, far removed from old ones and having no connection, become tenanted with fish and eels, as it seems quite within the bounds of possibility that the beetles may carry the spawn attached to their bodies —J. FROST; Headcorn, Kent, Nov. 13.

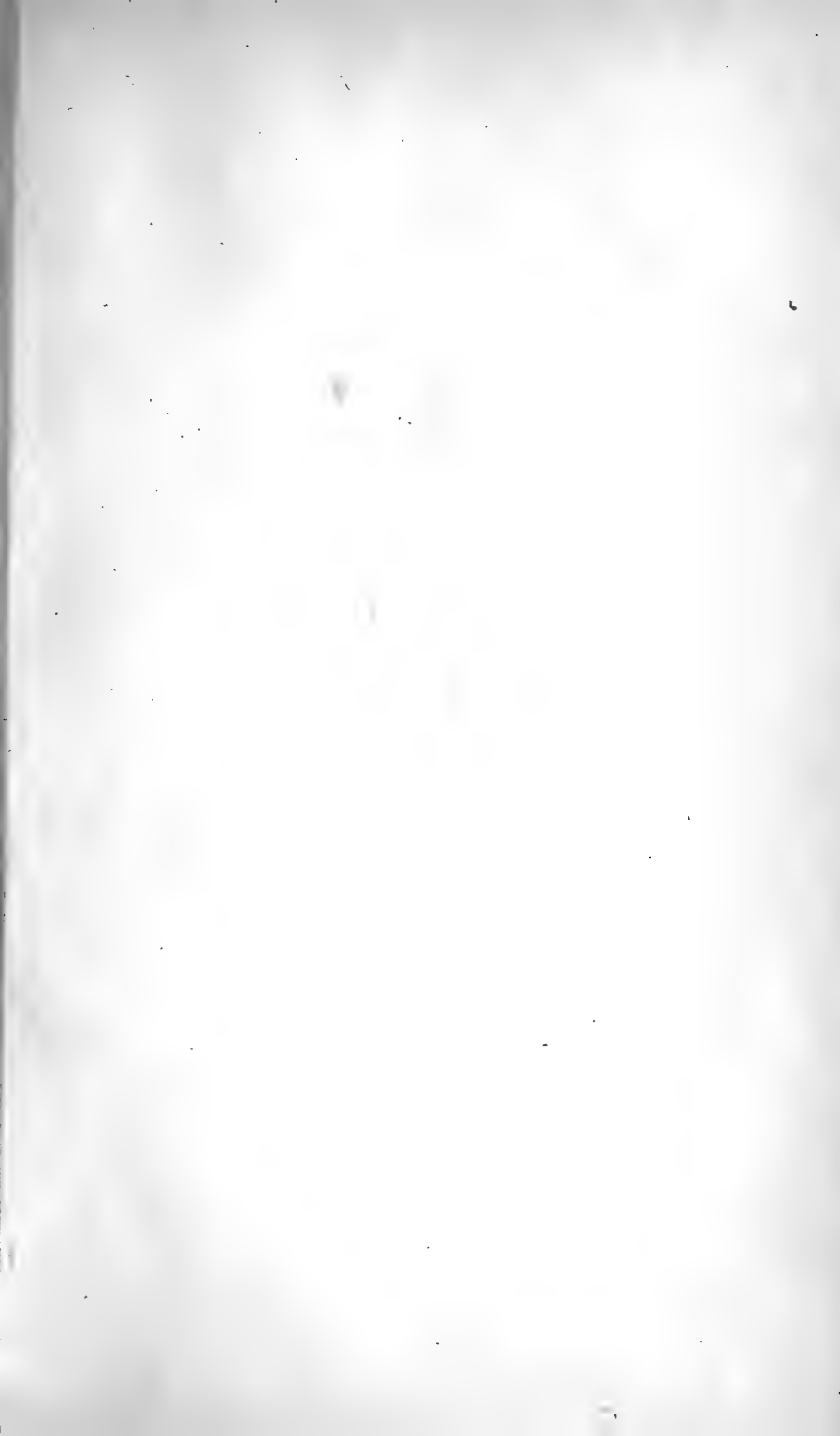
WEST LONDON ENTOMOLOGICAL SOCIETY POCKET-BOX EXHIBITION. — An exhibition of British insects took place on the evening of November 16th, in this society's room, St. Mark's Institute, George Street, Oxford Street. Although called a pocket-box exhibition, many of the exhibitors had very properly

not confined themselves to the small space obtainable in such receptacles, but showed their exhibits in cabinet drawers or large glazed cases; among these may be mentioned Mr. Southey's interesting collection of Lepidoptera captured in the north of London during the year now drawing to a close. Mr. Gee also exhibited a case of Lepidoptera taken this year in the Highgate district, among which were some very nice aberrant forms of *Abraxas grossulariata*; one especially rich form had been captured while at rest on a wall. Two cases of carefully-preserved larvæ were shown by Mr. C. H. Williams; also imagines of *Stauropus fagi*, *Heliothis peltigera*, *Acidalia contiguaria*, &c. Mr. Dow's exhibit comprised *Eupæcilia subroseana*, *Chrosis rutilana*, *Cochylis dipoltana*, and other interesting Tortrices; and the boxes of Mr. Boden contained a very fine lot of Crambites and Tortrices, about twenty-five species in all, the most noteworthy being *Crambus latistriellus*, *C. hamellus*, *Cryptoblabes bistrigella*, *Phycis abietella*, *Mixodia rubiginosana*, *Coccyx pygmæana*, *Chrosis bifasciana*, Hub. (= *audouinana*, Dup.), and some bred *Coleophora inflatella*; also two insects, about the identification of which there seems to be some diversity of opinion; one of these would appear to be an exaggerated example of *Catoptria ulicetana*, and the other possibly a very pretty form of *Sericoris cespitana*. Mr. Burrey showed, among other insects, examples of *Notodonta trepida*, and three specimens of *Fidonia piniaria*, two of which were slightly different from the normal form, but the third example was a very striking aberration; also a fine series of *Crymodes exulis*; these latter were exhibited on behalf of Mr. G. Clark, of Rannoch. Mr. Gates and Mr. Stevens both showed varieties of *Chelonia caja*, together with other insects; and Messrs. Riches, Knight, and Whiman each exhibited several interesting specimens captured this year. In my own box I had varieties of *Polyommatus phleas*, and a specimen of *Vanessa urticæ* in which the two usual smaller black spots on anterior wings are reduced almost to vanishing point. — F. GODWIN; Hon. Sec.

SOUTH LONDON ENTOMOLOGICAL SOCIETY. — A special pocket-box exhibition was held on Thursday, October 25th, 1883, at the Society's rooms, 94, New Kent Road, S.E. The Vice-President, Mr. W. West, occupied the chair in the absence of the President, Mr. J. R. Wellman, who was unable to attend through illness.

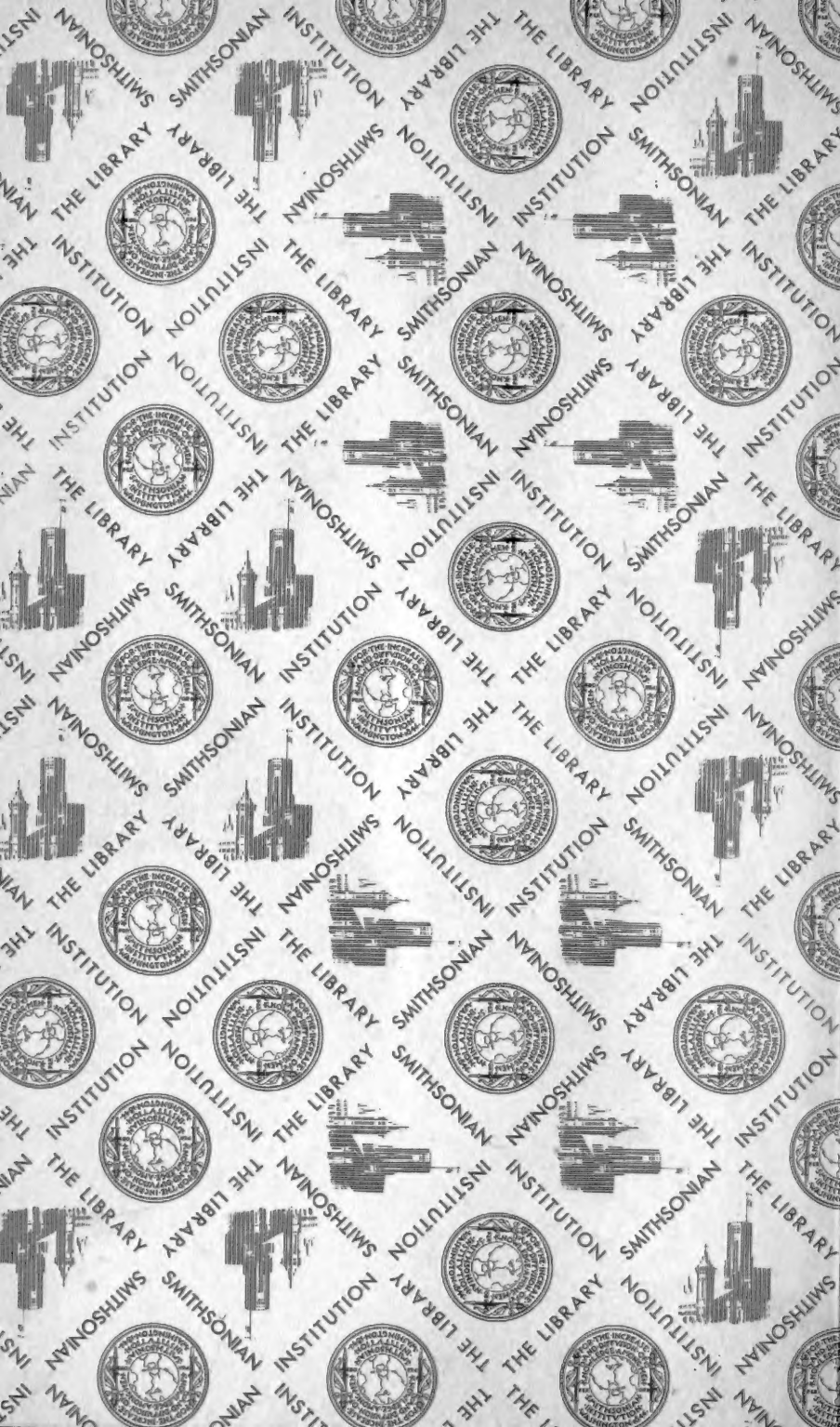
Twenty-one boxes were shown, and comprised the following :—Mr. W. A. Pearce, *Aspilates gilvaria*, *Eubolia mensuraria*, and *Anaitis plagiata*. Mr. W. West, *Ligdia adustata*, *Acidalia emutaria*, *Melanippe procellata*, and *Ephyra omicronaria*. Mr. South, *Boarmia repandata*, *B. consortaria*, *Pyrallis fimbrialis*, variety of *Lycæna adonis*, male variety of *L. corydon*, male variety of *L. alexis*, three varieties of *Hadena rectilinea*, *Dianthæcia carpophaga*, and variety of *Aspilates citraria*. Mr. Adkin, *Nola centonalis*. Mr. Oldham, *Chelonia caja*, *Argynnis paphia*, *Acronycta psi*, *A. megacephala*, *Arge galathea*, *Miselia oxyacanthæ*, and *Apamea ophiogramma*. Mr. H. L. Bolger, *Dicranura vinula*. Mr. Chaney, a small collection of Coleoptera. Mr. T. R. Billups exhibited seven boxes, as follows :—Box 1, fifty species of Ichneumonidæ, taken at Sevenoaks and Headley Lane, June, 1883, several being of great rarity. Box 2, sixty species of Diptera, taken in 1883. Box 3, twenty-five species of Hymenoptera Aculeata, most of them being bees, taken at Margate, August 1st, 1883. Box 4 contained specimens of galls of *Cynips kollari* and the maker; also forty-two species of Parasites and Inquilines, reared from the same galls. Box 5, thirty-nine species of Hydradephaga, or water-beetles, from West Ham and Loughton. Box 6, fifteen species of rare Coleoptera taken during the season. Box 7, larva, pupa, and imago of *Tephritis onopordonis*, or celery-fly, which has done vast damage this year to the celery crops.—W. H. MILES, Hon. Sec.

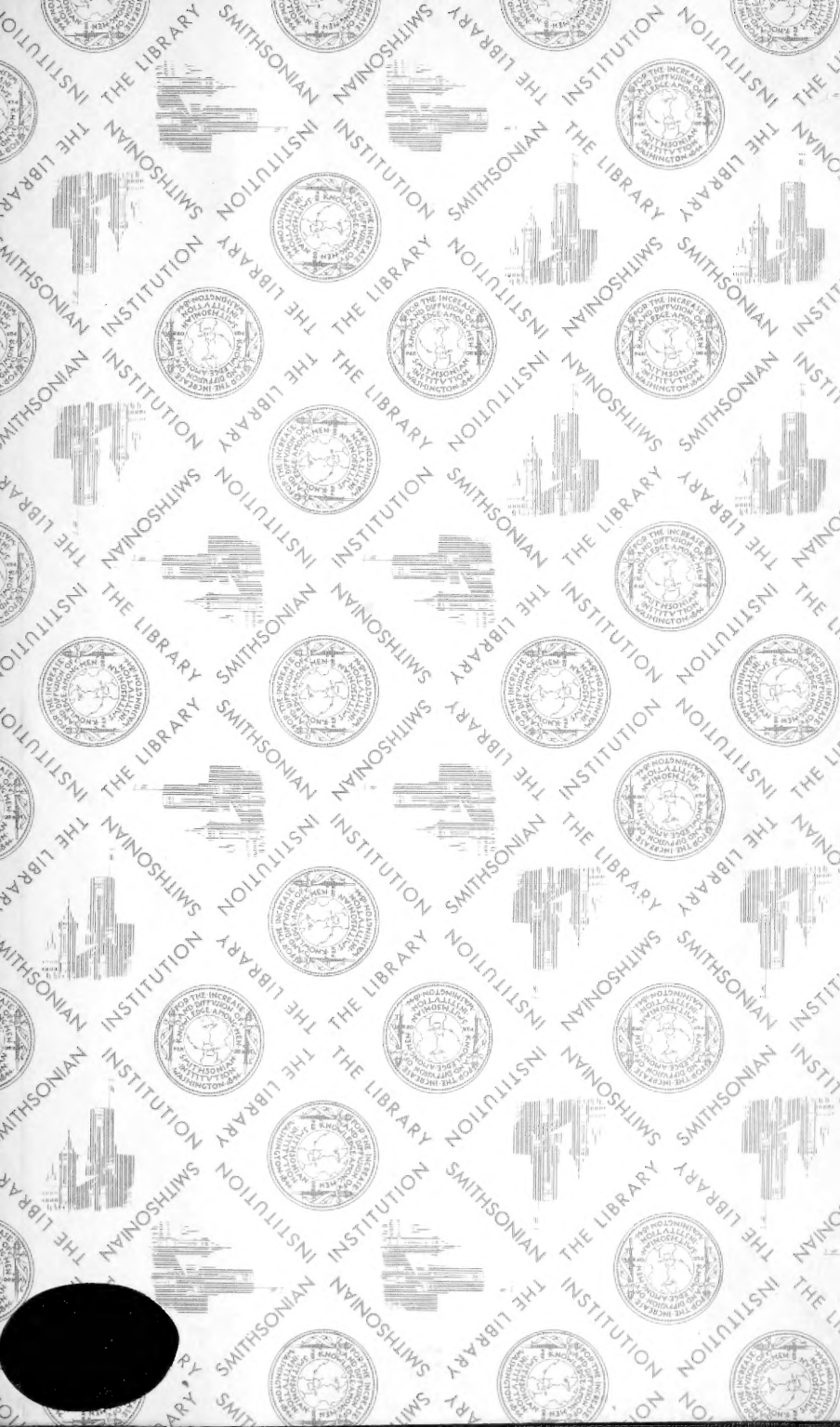












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